THE PENNSYLVANIA ENERGY PROFILE
1960 - 1986

APRIL 1987

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Dear Friends:

As Chairman of the Pennsylvania Energy Office, I am pleased to present to you the newest edition of the "Pennsylvania Energy Profile." The generation and consumption of energy in Pennsylvania have undergone significant changes over the past twenty-five years. The data presented in this report provide a wide variety of information relating to Pennsylvania's energy system and identify where those changes have occurred.

Energy is an indispensable ingredient of our economic growth potential in the Commonwealth. We are national leaders in coal production and total energy consumption. We have both an opportunity and a responsibility to meet the daily challenges we encounter in planning our energy needs.

State government has an important role in the energy planning process. In order to develop effective energy policy, reliable data must be available. The "Pennsylvania Energy Profile" is designed to assist in proper planning and good decision making.

If you need additional information or assistance, please contact the Pennsylvania Energy Office at 717-783-9981.

Sincerely,

Mark S. Singel

Mark S. Singel
Lieutenant Governor
Chairman
Pennsylvania Energy Office

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1960 - 1986

Pennsylvania Energy Office

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FOREWORD

The Pennsylvania Energy Profile 1960-1986 presents an update of energy statistics for the state of Pennsylvania. It is intended to serve as a reference source of energy-related information, to be used by the general public, as well as by business and governmental leaders.

The Pennsylvania Energy Office encourages questions and comments regarding the information presented in this report. Inquiries may be directed to Pamela S. Beaudoy at (717) 783-9981.

Assistance in the preparation of this report was provided by the following support staff:

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INTRODUCTION

The Pennsylvania Energy Office, Bureau of Fossil Fuels, collects data and prepares periodic reports concerning the production, consumption, distribution and prices of energy sources in Pennsylvania. The Pennsylvania Energy Profile presents Pennsylvania-specific information on energy production, consumption, distribution, prices and expenditures by fuel type and sector. The compilation of energy statistics is intended to be a useful reference for those concerned with Pennsylvania's energy situation. The 1987 edition provides data for years 1960 through 1985 and for 1986 where available. Several of the data series begin with 1970 or 1980.

Pennsylvania's production and consumption by fuel type are presented in Section 1. Tables indicate production and consumption by fuel type in Btu and physical units. Series of energy indicators for the state and the nation are also included. Miscellaneous data related to home heating fuels and heating degree days are provided.

Section 2 presents Pennsylvania's total use of energy resources, disaggregated by fuel type and economic sector, including residential, commercial, industrial, transportation and electric utilities. Total energy consumption data include electrical system energy losses.

Section 3 contains more detailed statistics about the major contributors to Pennsylvania's total petroleum end-use. These contributors include motor gasoline, distillate and residual fuel oil. Total petroleum consumption data include the following non-energy petroleum products: asphalt, lubricants and road oil. Data are also presented on U.S. petroleum supply and disposition.

Natural gas consumption by end-use sector is presented in Section 4, along with the 1985 highlights of the state's natural gas industry.

Information on activity in the oil and gas sectors is presented in Section 5. Historical data are displayed on production, unit price and total value of crude oil and natural gas. A comparison of exploratory and development drilling for the most recent two years is also presented.

Section 6 examines Pennsylvania's anthracite and bituminous coal industry, and provides an overview of production, consumption, imports, exports, and distribution of coal by consuming sector. More detailed information identifies anthracite exports by customs district and country of destination. The level of bituminous imports from other coal producing states is also recorded.

Section 7 presents selected information about Pennsylvania's electric utility sector, including electricity generated, sales, total power produced by all utilities and primary fuel consumption and year-end stocks. The most current information available regarding existing generating capability and planned capacity additions is shown by utility and plant.

Monthly statistics on electricity generated by Pennsylvania's nuclear power plants in 1985 are displayed in Section 8, and these are supplemented by projections of expected generation through 1995.

Fuel price data for the residential, commercial and industrial sectors are presented in Section 9. No. 2 fuel oil, motor gasoline, natural gas and electricity prices are highlighted. For each sector, prices are reported in current and constant dollars and are referenced both by physical units of measurement and energy content. Additional selected fuel prices are also included.

Pennsylvania energy expenditures are discussed in Section 10. Annual expenditures for energy from 1970 through 1984 are disaggregated by type of fuel and economic sector. Information is provided on the residential, commercial, industrial and transportation sectors.

1. ENERGY SUMMARY

Total energy production in Pennsylvania was 1,744.1 trillion British thermal units (Btu) in 1985, nearly 9.6 percent below the 1984 level. Production was down 22.0 percent from the amount produced in 1960, which was 2,235.4 trillion Btu.

Coal, the most abundant primary energy source in Pennsylvania, accounted for 88.9 percent of the state's total energy production in 1985. Pennsylvania continues to rank as the fourth leading coal-producing state.

In 1985, total coal production declined to 70,764 thousand tons. This was 8.9 percent below the 77,700 thousand tons produced in 1984. The significant decrease occurred in bituminous coal production, which fell from 73,806 thousand tons in 1984 to 65,535 thousand tons in 1985, nearly the same amount produced in 1960. Anthracite coal production, however, increased for the second year in a row to 5,229 thousand tons in 1985, from 3,894 thousand tons in 1984. This still represents a decrease of 70.5 percent over 1960, when anthracite coal production totaled 17,721 thousand tons.

In 1985, crude oil production was 4,851 thousand barrels, with no real change from the previous year. However, production has risen an average of 7.8 percent annually since 1977, when it was at an all time low of 2,659 thousand barrels.

Pennsylvania's natural gas production decreased in 1985 by 9.5 percent, from the 1984 total of 166,342 million cubic feet to 150,541 million cubic feet. Natural gas accounted for 8.9 percent of the state's total energy production.

Electricity generation from hydro-electric power for 1985 decreased from 1,446 million kilowatt-hours in 1984 to 971 million kilowatt-hours in 1985, a reduction of 32.8 percent.

In 1984, Pennsylvania ranked as the sixth largest energy consuming state in the nation. Total energy consumption increased 5.6 percent to 3,428.3 trillion Btu, up from 3,247 trillion Btu in 1983. Coal was the major source of energy and the industrial sector was the leading end-user of all energy.

From 1960 to 1973, the period prior to the 1973-74 oil embargo, total energy consumption grew at a compound annual rate of 2.2 percent. For this period, all states experienced growth in energy consumption. In Pennsylvania, total energy use reached a peak level of 4,240.2 trillion Btu in 1973. Between 1973 and 1984, a decline of 19.1 percent occurred, representing a negative growth rate of 2 percent annually. Pennsylvania was one of twenty-four states which showed a decline in estimated energy consumption during the post-embargo period.

Petroleum consumption, estimated at 223,057 thousand barrels in 1984, was 12.8 percent greater than in 1960, but 24.0 percent less than the 1973 peak level of 293,362 thousand barrels. Pennsylvania ranked as the seventh largest pe-

troleum consuming state in 1984.

As in 1960, Pennsylvania led the country in coal consumption in 1984. However, the predominant end-use for coal shifted heavily in the direction of fuel for electricity generation. Although the state consumed more coal than any other in the nation in 1984 - approximately 58,030 thousand tons - consumption was down 4.3 percent from 1960 and down 19.9 percent from the peak quantities consumed in 1973.

By 1984, natural gas consumption had dropped 13.5 percent from the 677 billion cubic feet consumed in 1973. Pennsylvania, the eighth largest consumer of natural gas, used almost 30 percent less than in 1960.

Between 1973 and 1984, a significant increase occurred in the consumption of energy derived from nuclear power. Estimated use grew from 361 million kilowatt-hours to 21,564 million kilowatt-hours. This is only 3.4 percent less than the peak level of 22,329 million kilowatt-hours reached in 1978, the year prior to the accident at Three Mile Island.

Hydro-electric power usage rose 23.7 percent over 1983 to reach 1,447 million kilowatt-hours by 1984. Consumption has not changed much over the past 25 years. The peak level reached was 1,914 million kilowatt-hours in 1967.

Total energy consumption was down 15.6 percent between 1970 and 1984. In 1984, total energy consumption per dollar of Gross State Product (GSP) was 22.6 thousand Btu per 1982 dollar. In 1970, the ratio was 30.3 thousand Btu per 1982 dollar. Petroleum consumption per dollar of GSP remained at 8.2 thousand Btu for the second year in a row. The ratio was 11.5 in 1970. All other energy consumption, including coal, natural gas, hydro-electric power and nuclear power, per dollar of GSP was reported at 18.8 thousand Btu per 1982 dollar in 1970 and 14.5 in 1984.

As costs of crude oil declined in 1986, motor gasoline and fuel oil costs to Pennsylvania end-users also declined. In constant 1972 dollars, the 1986 price of leaded regular motor gasoline, full-service, averaged 41 cents per gallon, down from 50 cents per gallon in 1985. A comparison made in constant 1972 dollars shows that prices have not been this low since 1978, when the average cost was 40 cents per gallon. The price of No. 2 home heating oil in constant 1972 dollars also declined from 40 cents per gallon in 1985 to 30 cents per gallon in 1986, a level not seen since 1976. The price of natural gas in constant 1972 dollars to residential customers rose slightly from $2.70 per thousand cubic feet in 1985 to $2.87 per thousand cubic feet in 1986. The average retail price of electricity to residential customers increased from 3 to 4 cents per kilowatt-hour in constant 1972 dollars.

Net imports of petroleum reached 4.3 million barrels per day in 1985, down from 4.7 million barrels per day in 1984.

Net imports from all members of the Organization of Petroleum Exporting Countries (OPEC) averaged 1.8 million barrels per day. Petroleum net imports from Arab members alone averaged 0.5 million barrels per day. As a percentage of U. S. petroleum products supplied, petroleum net imports from all countries dropped to 27.3 percent in 1985, down from 30.0 percent in 1984. Net imports from OPEC were 11.6 percent of U. S. petroleum products supplied in 1985, down from 13.0 percent in 1984. Net imports from Arab members of OPEC fell from 5.2 percent to 3.0 percent. By comparison, Arab members of OPEC provided 16.5 percent of U. S. petroleum products supplied in 1979, when U. S. dependence on those sources peaked.

Nationally, the average amount of fuel consumed per car in 1985 was estimated to be 549 gallons, down 28 percent from 1973 when the average amount consumed was 763 gallons. Total average miles traveled for 1985 was 9,827. The average miles traveled per gallon was the highest ever at 17.9 miles.

TABLE 1

PENNSYLVANIA PRODUCTION OF ENERGY BY SOURCE
1960 - 1985

Year	Anthracite Coal		Bituminous Coal		Total Coal		Crude Oil		Natural Gas		Hydro Electricity		Total Primary Energy Production	Change From Previous Year
	Trillion Btu	Thousand Tons	Trillion Btu	Thousand Tons	Trillion Btu	Thousand Tons	Trillion Btu	Thousand Barrels	Trillion Btu	Million Cubic Feet	Trillion Btu	Million Kwh	Trillion Btu	Percent
1960	420.3	17,721	1,637.3	65,596	2,057.6	83,317	34.5	5,942	123.9	119,671	19.4	1,809	2,235.4	-
1961	393.8	16,507	1,572.5	63,171	1,966.3	79,678	32.4	5,580	101.8	98,318	15.7	1,472	2,116.2	(5.3)
1962	392.8	16,496	1,632.6	65,648	2,025.4	82,144	30.4	5,238	90.4	87,308	15.9	1,504	2,162.1	2.2
1963	411.5	17,411	1,772.9	71,259	2,184.4	88,670	29.1	5,014	95.2	92,340	13.3	1,267	2,322.0	7.4
1964	388.5	16,525	1,924.3	77,322	2,312.8	93,847	29.7	5,113	88.1	85,322	13.3	1,267	2,443.9	5.2
1965	334.0	14,230	1,988.1	80,120	2,322.1	94,350	28.2	4,859	85.3	82,668	13.7	1,313	2,449.3	0.2
1966	279.1	12,031	2,008.9	81,450	2,288.0	93,481	25.2	4,349	94.4	91,365	14.8	1,425	2,422.4	(1.1)
1967	261.7	11,552	1,939.2	79,101	2,200.9	90,653	25.6	4,409	92.8	89,966	19.8	1,899	2,339.1	(3.4)
1968	247.2	11,025	1,854.0	75,715	2,101.2	86,740	24.1	4,160	90.7	87,987	12.1	1,168	2,228.1	(4.7)
1969	229.2	10,166	1,900.9	78,185	2,130.1	88,351	25.8	4,448	81.6	79,134	9.4	902	2,246.9	0.8
1970	209.0	9,248	1,911.2	80,092	2,120.2	89,340	23.3	4,015	79.9	77,535	13.1	1,251	2,236.5	(0.5)
1971	186.0	8,188	1,688.1	71,777	1,874.1	79,965	22.0	3,798	78.8	76,451	8.1	771	1,983.0	(11.3)
1972	144.9	6,462	1,775.2	75,863	1,920.1	82,325	20.0	3,441	76.0	73,958	15.9	1,533	2,032.0	2.5
1973	139.3	6,293	1,796.4	76,797	1,935.7	83,090	19.0	3,282	80.2	78,514	14.2	1,371	2,049.1	0.8
1974	132.2	6,090	1,847.9	80,042	1,980.1	86,132	19.7	3,399	84.7	82,735	14.5	1,392	2,099.0	2.4
1975	121.5	5,629	1,935.4	84,479	2,056.9	90,108	18.6	3,199	86.6	84,772	16.4	1,575	2,178.5	3.8
1976	116.7	5,292	1,960.5	85,748	2,077.2	91,040	17.1	2,950	91.8	89,974	14.7	1,415	2,200.8	1.0
1977	114.7	5,061	1,952.9	86,422	2,067.6	91,483	15.4	2,659	94.2	92,293	12.6	1,205	2,189.8	(0.5)
1978	116.3	5,038	1,787.0	80,343	1,903.3	85,381	16.4	2,820	99.6	97,763	7.9	759	2,027.2	(7.4)
1979	112.0	4,835	2,001.7	89,167	2,113.7	94,002	16.3	2,817	98.3	96,313	12.7	1,221	2,241.0	10.6
1980	136.8	5,983	1,951.3	87,069	2,088.1	93,052	17.1	2,940	100.0	97,439	7.6	734	2,212.8	(1.3)
1981	119.4	5,125	1,741.4	78,083	1,860.8	83,208	21.6	3,729	125.8	122,454	6.9	659	2,015.1	(8.9)
1982	93.0	3,993	1,662.1	74,755	1,755.1	78,748	24.8	4,282	124.5	121,111	19.1	1,828	1,923.5	(4.5)
1983	66.5	2,923	1,515.8	68,733	1,582.3	71,656	26.0	4,491	122.0	118,372	12.2	1,169	1,742.5	(9.4)
1984	90.0	3,894	1,624.4	73,806	1,714.4	77,700	28.0	4,825	171.5	166,342	14.8	1,446	1,928.7	10.7
1985	117.3	5,229	1,433.3	65,535	1,550.6	70,764	28.1	4,851	155.5	150,541	9.9	971	1,744.1	(9.6)

Note: Approximate heat contents (Btu values) are derived using the conversion factors provided in the U.S. Department of Energy's *Annual Energy Review*. These conversion factors for 1979-1986 are reproduced in the Conversion Factors section of this publication.

Note: Parentheses denote negative numbers.

Sources: Pennsylvania Department of Environmental Resources, Bureau of Topographic and Geological Survey, Oil and Gas Geology Division, *Oil and Gas Developments in Pennsylvania*; Bureau of Deep Mine Safety, Statistical Unit, *Annual Report on Mining Activities*, 1985. U.S. Department of Energy, Energy Information Administration, *Electric Power Annual 1985*, July 1986; *Annual Energy Review 1985*, May 1986.

FIGURE 1

PENNSYLVANIA ENERGY PRODUCTION
AND CONSUMPTION, 1960 – 1985

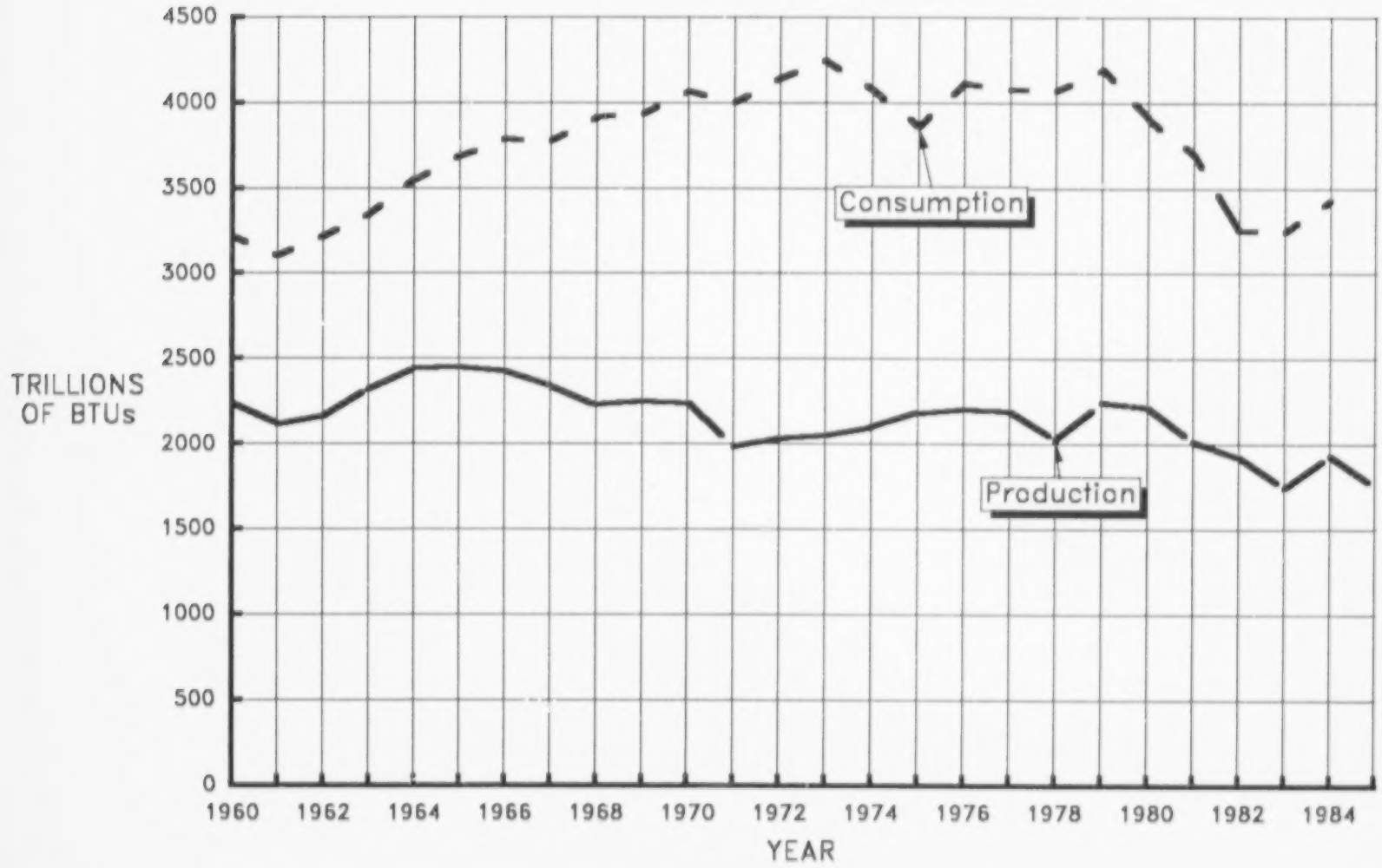


TABLE 2

PENNSYLVANIA CONSUMPTION OF ENERGY BY SOURCE
1960 - 1984

Year	Total Coal[1]		Natural Gas[2]		Hydro-Electric Power[3]		Nuclear Power		Petroleum[4]		Net Interstate Sales of Electricity[5]		Total Energy Consumption	Change From Previous Year
	Trillion Btu	Thousand Tons	Trillion Btu	Billion Cubic Ft	Trillion Btu	Million Kwh	Trillion Btu	Million Kwh	Trillion Btu	Thousand Barrels	Trillion Btu	Million Kwh	Trillion Btu	Percent
1960	1,530.6	60,637	540.1	522	19.6	1,826	2.7	230	1,126.0	197,789	(5.4)	1,588	3,213.6	-
1961	1,431.7	56,701	547.7	529	15.9	1,489	3.5	305	1,099.1	193,527	2.1	621	3,100.0	(3.5)
1962	1,477.7	58,440	568.7	550	16.0	1,519	3.7	320	1,150.8	202,418	(2.2)	630	3,214.7	3.7
1963	1,538.6	60,809	604.2	586	13.4	1,280	4.2	355	1,179.0	207,434	3.1	908	3,342.5	4.0
1964	1,699.1	66,989	628.4	609	13.4	1,281	0.3	25	1,203.3	211,749	2.9	844	3,547.4	6.1
1965	1,751.4	68,918	649.1	629	13.9	1,329	3.7	313	1,252.0	220,187	16.3	4,765	3,686.4	3.9
1966	1,746.7	68,954	699.5	677	15.0	1,443	6.1	525	1,292.6	227,123	27.4	8,027	3,787.3	2.7
1967	1,701.3	67,506	700.2	678	20.0	1,914	7.0	603	1,318.6	232,207	28.7	8,405	3,775.8	(0.3)
1968	1,726.0	68,655	740.2	718	12.3	1,182	5.3	468	1,384.1	244,116	45.2	13,236	3,913.1	3.6
1969	1,629.1	64,993	789.7	766	9.6	916	4.6	415	1,454.0	255,933	47.0	13,773	3,934.0	0.5
1970	1,699.2	68,580	796.3	772	14.3	1,366	5.1	465	1,536.8	269,938	9.8	2,880	4,061.5	3.2
1971	1,619.6	65,822	827.0	802	8.2	779	4.8	445	1,562.1	274,880	(24.6)	7,214	3,997.1	(1.6)
1972	1,662.6	67,173	851.3	829	15.9	1,533	3.1	288	1,656.7	292,218	(52.8)	15,463	4,136.8	3.5
1973	1,798.6	72,477	799.0	783	14.3	1,372	3.9	361	1,663.4	293,362	(39.0)	11,438	4,240.2	2.5
1974	1,661.6	67,606	732.7	716	14.5	1,393	78.1	6,998	1,603.9	282,782	(16.5)	4,823	4,074.3	(3.9)
1975	1,646.8	67,047	666.8	654	16.4	1,576	174.8	15,869	1,466.5	260,670	(116.5)	34,158	3,854.8	(5.4)
1976	1,676.0	67,656	727.1	714	14.7	1,416	181.4	16,425	1,636.1	290,053	(124.4)	36,456	4,110.9	6.6
1977	1,570.8	63,544	681.0	668	12.6	1,205	191.9	15,821	1,731.5	306,038	(111.4)	32,652	4,076.4	(0.8)
1978	1,565.1	63,183	684.6	674	7.9	760	244.3	22,329	1,733.3	306,842	(165.0)	48,369	4,070.2	(0.2)
1979	1,748.8	70,377	754.2	741	12.7	1,222	204.5	18,796	1,649.3	293,356	(178.9)	52,423	4,190.6	3.0
1980	1,623.8	65,659	794.4	776	7.6	734	131.9	12,091	1,465.9	261,814	(117.7)	34,491	3,905.9	(6.8)
1981	1,480.0	60,115	804.3	785	6.9	660	157.5	14,276	1,312.3	235,698	(60.9)	17,849	3,700.1	(5.3)
1982	1,283.6	52,372	712.7	695	19.1	1,829	182.4	16,472	1,197.0	216,197	(143.1)	41,933	3,251.7	(12.1)
1983	1,328.4	53,698	663.9	644	12.2	1,170	160.5	14,718	1,236.9	222,707	(155.0)	45,418	3,246.9	(0.1)
1984	1,441.1	58,030	697.0	677	15.0	1,447	232.9	21,564	1,234.2	223,057	(191.9)	56,247	3,428.3	5.6

[1] *Includes anthracite, bituminous and lignite.*

[2] *Includes supplemental gaseous fuels.*

[3] *Includes industrial and electric utility production, and net imports of electricity.*

[4] *Includes all energy and non-energy petroleum products.*

[5] *Net interstate sales of electricity is the difference between the amounts of energy in the electricity sold within the state (including associated losses) and the energy input at the electric utilities within the state. The net interstate sales, therefore, include associated electrical system energy losses. A positive number indicates that more electricity (including associated losses) came into the state than went out of the state during the year; conversely, a negative number indicates that more electricity (including associated losses) went out of the state than came into the state.*

Note: Parentheses denote negative numbers.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

TABLE 3

PENNSYLVANIA AND UNITED STATES CENSUS DATA FOR HOME HEATING FUELS 1970 AND 1980

	1970	Percent[1]	1980	Percent[1]	1970-1980 Change Number	1970-1980 Change Percent[1]
PENNSYLVANIA						
Occupied Housing Unit	3,702,304	100.0	4,219,606	100.0	517,302	14.0
Utility Gas	1,788,010	48.3	2,062,671	48.9	274,661	15.4
Bottled, Tank, LP Gas	31,412	0.8	41,357	1.0	9,945	31.7
Electricity	145,727	3.9	432,714	10.3	286,987	196.9
Fuel Oil, Kerosene, etc.	1,294,817	35.0	1,458,870	34.6	164,053	12.7
Coal or Coke	413,422	11.2	146,108	3.5	(267,314)	(64.7)
Wood	5,559	0.2	66,033	1.6	60,474	1,087.9
Other Fuel	20,019	0.5	9,654	0.2	(10,365)	(51.8)
No Fuel used	3,338	0.1	2,199	0.1	(1,139)	(34.1)
UNITED STATES						
Occupied Housing Unit	63,446,641	100.0	80,389,673	100.0	16,943,032	26.7
Utility Gas	35,013,745	55.2	42,876,081	53.3	7,862,336	22.5
Bottled, Tank, LP Gas	3,806,948	6.0	4,417,493	5.5	610,545	16.0
Electricity	4,876,038	7.7	14,755,091	18.4	9,879,053	202.6
Fuel Oil, Kerosene, etc.	16,473,470	26.0	14,586,618	18.1	(1,886,852)	(11.5)
Coal or Coke	1,820,952	2.9	508,330	0.6	(1,312,622)	(72.1)
Wood	793,908	1.3	2,570,419	3.2	1,776,511	223.8
Other Fuel	266,286	0.4	137,454	0.2	(128,832)	(48.4)
No Fuel used	395,294	0.6	538,187	0.7	142,893	36.1

[1] *Percentages may not equal 100 because of independent rounding.*

Note: Parentheses denote negative numbers.

Sources: U.S. Department of Commerce, Bureau of the Census.
Pennsylvania State Data Center, Institute of State and Regional Affairs, Pennsylvania State University, *Housing Unit Utility Characteristics, Census of Population and Housing.*

TABLE 4

ENERGY INDICATOR
PENNSYLVANIA ENERGY CONSUMPTION PER DOLLAR OF GROSS STATE PRODUCT
1970 - 1984

Year	Annual Rate of Energy Consumption	Pennsylvania Gross State Product(GSP)	Pennsylvania Energy Consumption per Dollar of Gross State Product (GSP)		
			Total Energy	Petroleum	All Other Energy
	Trillion Btu	Billion 1982 Dollars	(Thousand Btu per 1982 dollar)		
1970	4,061.6	134.0	30.3	11.5	18.8
1971	3,997.1	133.8	29.9	11.7	18.2
1972	4,136.9	140.0	29.5	11.9	17.6
1973	4,240.2	141.8	29.9	11.7	18.2
1974	4,074.4	141.5	28.8	11.3	17.5
1975	3,854.8	138.6	27.8	10.6	17.2
1976	4,110.9	143.1	28.7	11.4	17.3
1977	4,076.4	146.7	27.8	11.8	16.0
1978	4,070.1	151.1	26.9	11.5	15.4
1979	4,190.5	152.0	27.6	10.9	16.7
1980	3,905.9	148.2	26.4	9.9	16.5
1981	3,700.1	148.0	25.0	8.9	16.1
1982	3,251.7	141.7	22.9	8.4	14.5
1983	3,247.0	151.3	21.5	8.2	13.3
1984	3,428.3	151.4	22.6	8.2	14.4

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.
Pennsylvania Department of Commerce, Bureau of Statistics, Research and Planning, *1986 Pennsylvania Abstract, A Statistical Fact Book*.

FIGURE 2

PENNSYLVANIA ENERGY CONSUMPTION PER DOLLAR OF GROSS STATE PRODUCT, 1970 – 1984

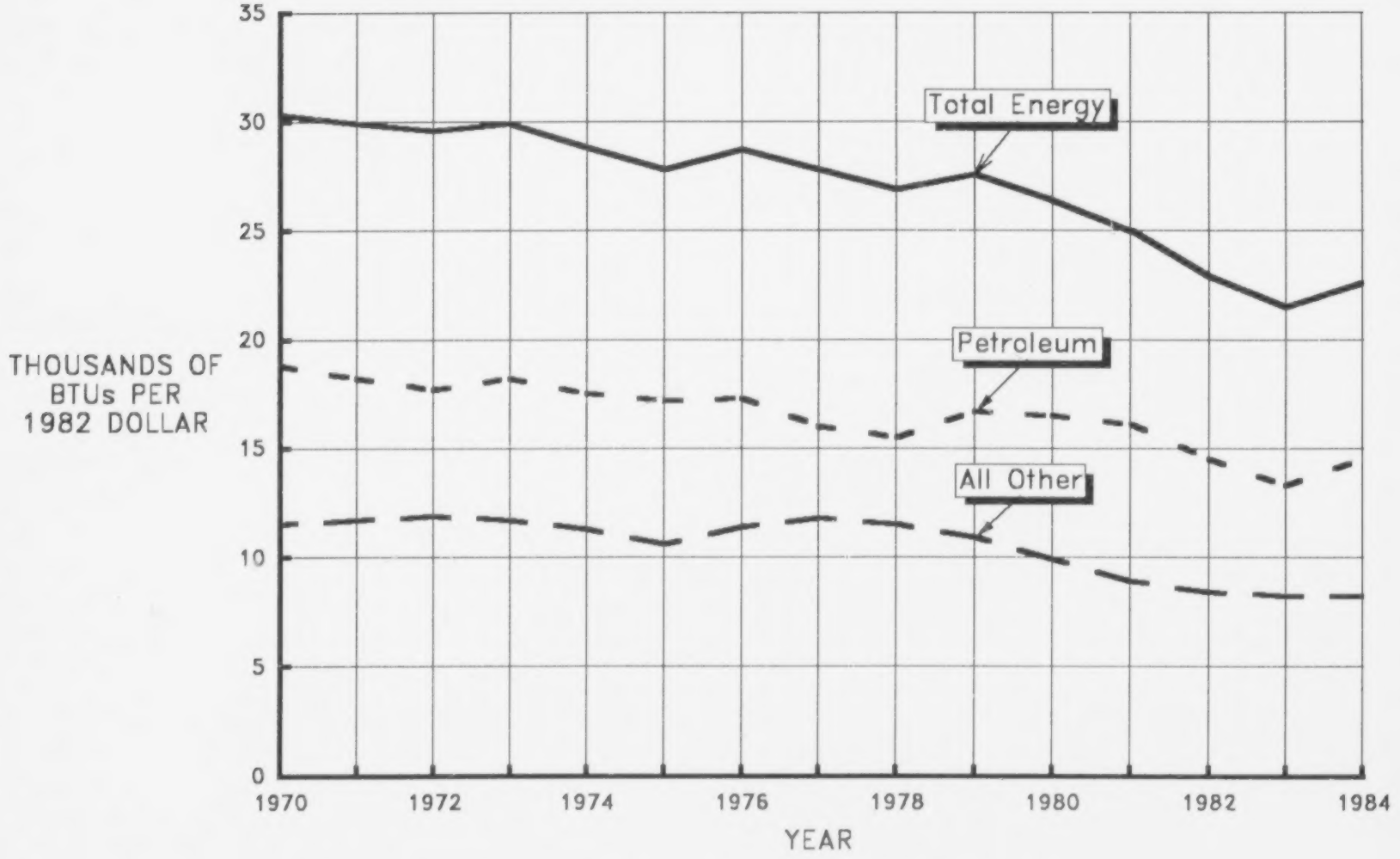


TABLE 5

ENERGY INDICATOR
COST OF FUELS TO PENNSYLVANIA END USERS IN CONSTANT (1972) DOLLARS[1]
1970 - 1986

Year	Leaded Regular Motor Gasoline[2]		Residential Heating Oil		Residential Natural Gas[3]		Residential Electricity[4]	
	cts/gal	$/MMBtu	cts/gal	$/MMBtu	$/mcf	$/MMBtu	cts/kwh	$/MMBtu
1970	39.31	3.14	20.17	1.45	1.34	1.30	2.64	7.74
1971	38.46	3.08	20.63	1.49	1.32	1.28	2.86	8.38
1972	36.74	2.94	20.11	1.45	1.35	1.31	2.90	8.50
1973	35.69	2.85	21.81	1.57	1.37	1.34	2.90	8.50
1974	44.85	3.59	30.82	2.22	1.41	1.38	3.31	9.70
1975	41.88	3.35	30.28	2.18	1.50	1.47	3.40	9.96
1976	41.68	3.33	29.86	2.15	1.57	1.54	3.27	9.58
1977	42.37	3.39	31.78	2.29	1.73	1.69	3.31	9.70
1978	39.64	3.17	31.31	2.26	1.69	1.66	3.20	9.38
1979	50.43	4.03	40.21	2.90	1.84	1.80	3.08	9.03
1980	62.37	4.99	48.93	3.53	1.94	1.89	3.03	8.88
1981	63.03	5.04	54.29	3.91	2.08	2.03	3.06	8.97
1982	56.17	4.49	49.30	3.55	2.35	2.29	3.32	9.73
1983	51.61	4.13	44.79	3.23	2.71	2.63	3.27	9.58
1984	49.67	3.97	43.85	3.16	2.63	2.55	3.22	9.44
1985	50.11	4.01	40.03	2.89	2.70	2.61	3.22	9.44
1986	40.86	3.27	30.14	2.17	2.87	2.78	3.26	9.55

[1] *The cost of fuels to end-users are reported in current and constant dollars in the price section of this report. Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*

[2] *Motor gasoline prices represent the full-service price in Philadelphia.*

[3] *Natural gas prices for 1986 represent the Philadelphia area as reported in the* Energy User News.

[4] *Electricity prices for 1984-1986 represent the average price for the seven major electric utilities in Pennsylvania.*

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987. (1970–1984).
American Gas Association, *Gas Facts*, 1985.
American Petroleum Industry, *Basic Petroleum Data Book*, Volume VI, Number 2, May 1986.
Pennsylvania Energy Office, Heating Oil and Motor Gasoline Survey, (1986).
Lundberg Letter (1970–1986).
Energy User News (1986).
Electric Utility Annual Reports; Ferc Form 1 (1984–1986).

FIGURE 3

FUEL COSTS TO PENNSYLVANIA END USERS
IN 1972 DOLLARS, 1970 – 1986

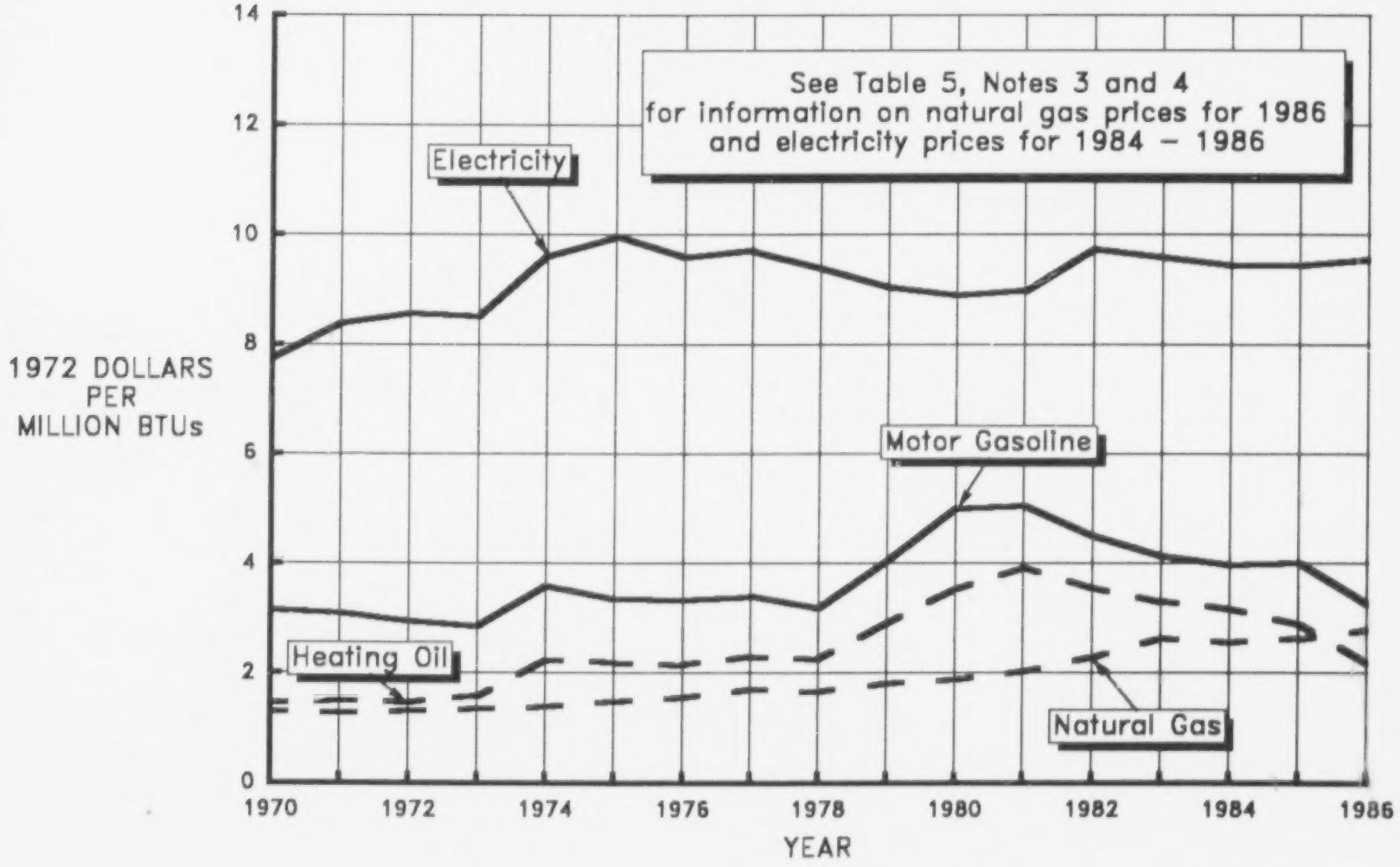


TABLE 6

ENERGY INDICATOR
U.S. DEPENDENCE ON PETROLEUM NET IMPORTS[1]
1973 - 1986

Year	Net Imports[2]			Petroleum Products Supplied	Net Imports as Percent of U.S. Petroleum Products Supplied		
	From Arab OPEC[3] Countries	From All OPEC[4] Countries	From All Countries		From Arab OPEC[3] Countries	From All OPEC[4] Countries	From All Countries
	Thousands of barrels per day				Percent		
1973	914	2,991	6,025	17,308	5.3	17.3	34.8
1974	752	3,277	5,892	16,653	4.5	19.7	35.4
1975	1,382	3,599	5,846	16,322	8.5	22.0	35.8
1976	2,423	5,063	7,090	17,461	13.9	29.0	40.6
1977	3,184	6,190	8,565	18,431	17.3	33.6	46.5
1978	2,962	5,747	8,002	18,847	15.7	30.5	42.5
1979	3,054	5,633	7,985	18,513	16.5	30.4	43.1
1980	2,549	4,293	6,365	17,056	14.9	25.2	37.3
1981	1,844	3,315	5,401	16,058	11.5	20.6	33.6
1982	852	2,136	4,298	15,296	5.6	14.0	28.1
1983	630	1,843	4,312	15,231	4.1	12.1	28.3
1984	817	2,037	4,715	15,726	5.2	13.0	30.0
1985	470	1,821	4,286	15,726	3.0	11.6	27.3
1986 1 Qtr	843	2,038	4,083	16,055	5.3	12.7	25.4
2 Qtr	1,138	2,714	5,321	15,864	7.2	17.1	33.5
3 Qtr	1,323	3,267	6,206	16,177	8.2	20.2	38.4

[1] *Beginning in October 1977, Strategic Petroleum Reserves are included.*
[2] *Net imports equals imports minus exports. Imports from OPEC countries exclude indirect imports which are petroleum products imported primarily from Caribbean and West European areas and refined from crude oil produced in OPEC countries.*
[3] *Includes Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates.*
[4] *Includes Arab OPEC countries plus Ecuador, Gabon, Indonesia, Iran, Nigeria, and Venezuela.*

Note: Geographic coverage is the 50 States and the District of Columbia.
Note: Annual averages may not equal quarterly averages due to independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, December 1986.

FIGURE 4

U. S. DEPENDENCE ON
PETROLEUM NET IMPORTS, 1973 – 1985

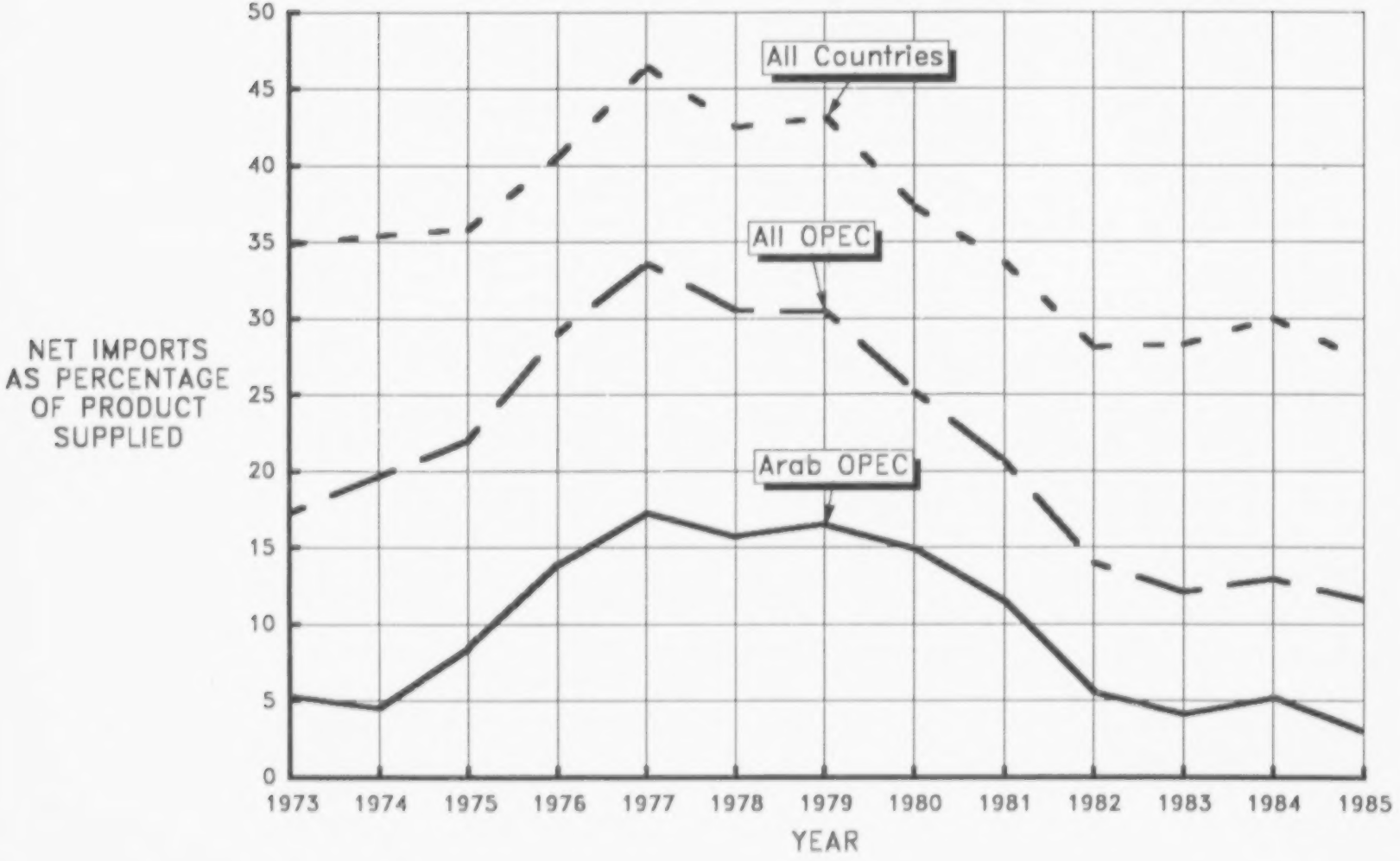


TABLE 7

ENERGY INDICATOR
U. S. PASSENGER CAR EFFICIENCY
1967 - 1985

Year	Average Fuel Consumed per Car		Average Miles Traveled per Car		Average Miles Traveled per Gallon of Fuel Consumed	
	Gallons	Index	Miles	Index	Miles	Index
1967	684	100.0	9,531	100.0	13.93	100.0
1968	698	102.0	9,627	101.0	13.79	99.0
1969	718	105.0	9,782	102.6	13.63	97.8
1970	735	107.5	9,978	104.7	13.57	97.4
1971	746	109.1	10,121	106.2	13.57	97.4
1972	755	110.4	10,184	106.9	13.49	96.8
1973	763	111.5	9,992	104.8	13.10	94.0
1974	704	102.9	9,448	99.1	13.43	96.4
1975	712	104.1	9,634	101.1	13.53	97.1
1976	711	103.9	9,763	102.4	13.72	98.5
1977	706	103.2	9,839	103.2	13.94	100.1
1978	715	104.5	10,046	105.4	14.06	100.9
1979	664	97.1	9,485	99.5	14.29	102.6
1980	603	88.2	9,135	95.8	15.15	108.8
1981	579	84.6	9,002	94.4	15.54	111.6
1982	587	85.8	9,533	100.0	16.25	116.7
1983	578	84.5	9,654	101.3	16.70	119.9
1984	553	80.8	9,787	102.7	17.70	127.1
1985[1]	549	80.3	9,827	103.1	17.90	128.5

[1] *Preliminary data.*

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, December 1986.

FIGURE 5

U. S. PASSENGER CAR EFFICIENCY, 1967 – 1985

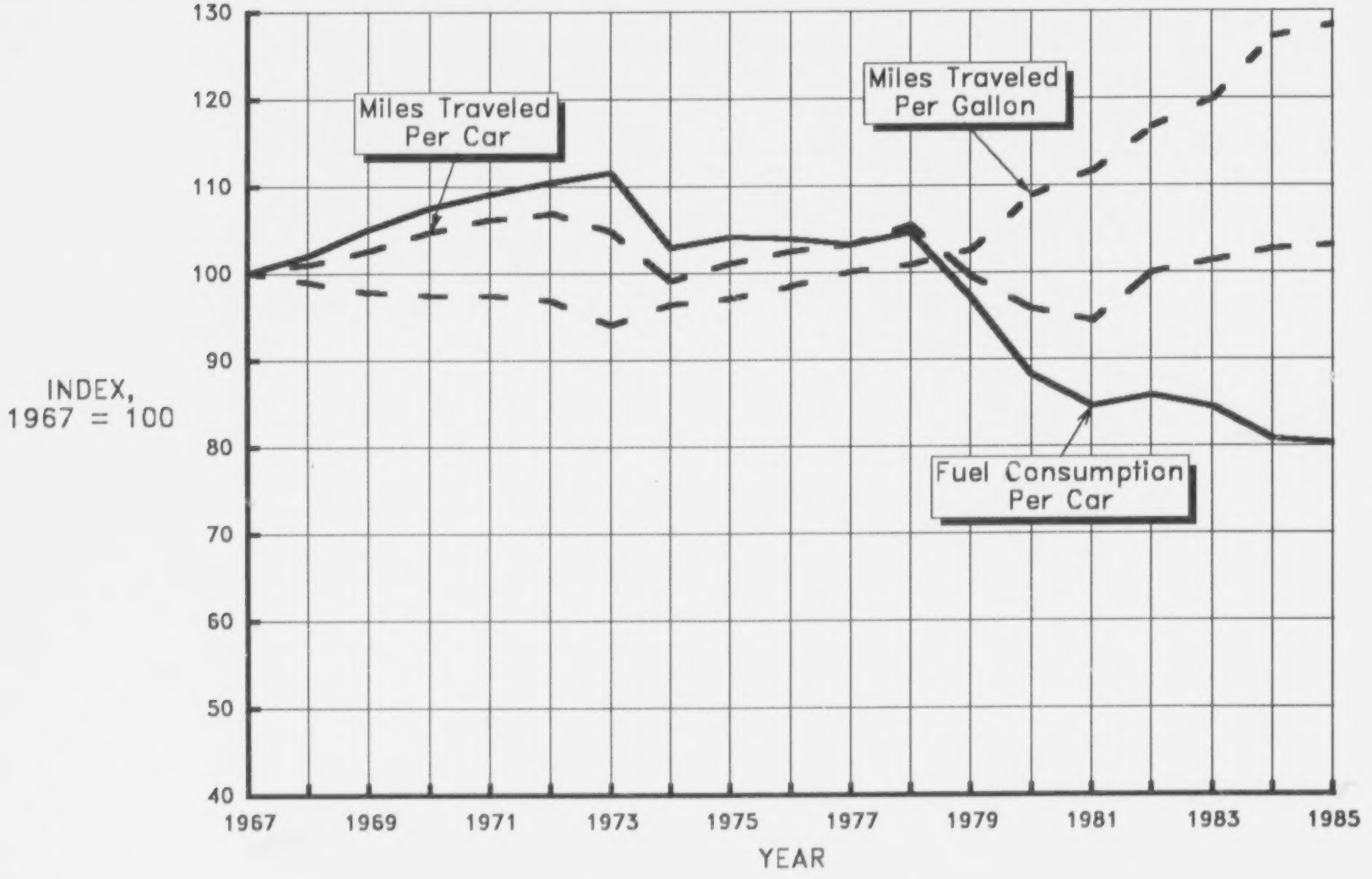


TABLE 8

HEATING DEGREE DAYS FOR PENNSYLVANIA AND SELECTED CITIES

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
PENNSYLVANIA													
1976/77	18	26	137	521	870	1,211	1,524	1,008	652	389	129	60	**6,545**
1977/78	2	11	68	436	613	1,092	1,300	1,255	934	498	228	39	**6,476**
1978/79	10	6	87	439	644	976	1,219	1,283	715	496	198	53	**6,126**
1979/80	9	13	102	421	579	936	1,137	1,103	900	450	166	65	**5,881**
1980/81	5	2	60	463	779	1,126	1,389	884	892	396	207	32	**6,235**
1981/82	6	18	121	483	707	1,082	1,377	991	857	562	136	72	**6,412**
1982/83	6	40	111	372	600	819	1,097	944	762	536	267	34	**5,588**
1983/84	4	5	85	369	661	1,158	1,300	824	1,029	516	270	26	**6,247**
1984/85	16	9	154	245	735	827	1,285	992	753	364	160	70	**5,610**
1985/86	9	16	77	338	550	1,149	1,141	1,023	776	436	143	40	**5,698**
ALLENTOWN													
1976/77	1	9	101	455	817	1,174	1,428	950	604	384	127	35	**6,085**
1977/78	0	10	56	356	623	1,077	1,238	1,190	871	430	189	15	**6,055**
1978/79	9	0	94	368	614	971	1,142	1,241	633	460	125	29	**5,686**
1979/80	13	22	76	386	509	884	1,058	1,087	808	356	87	41	**5,327**
1980/81	0	0	26	326	702	1,092	1,290	823	818	392	163	6	**5,638**
1981/82	0	3	100	465	643	1,058	1,389	975	851	528	110	50	**6,172**
1982/83	5	28	82	347	575	815	1,071	920	708	477	222	23	**5,273**
1983/84	0	1	96	336	639	1,121	1,295	813	963	464	211	12	**5,951**
1984/85	0	1	135	180	642	820	1,240	914	702	346	106	28	**5,114**
1985/86	0	3	85	324	559	1,093	1,098	1,025	735	427	115	20	**5,484**
AVOCA													
1976/77	8	25	155	519	834	1,297	1,546	1,058	756	487	206	90	**6,981**
1977/78	14	37	119	505	653	1,090	1,252	1,279	984	562	240	73	**6,808**
1978/79	38	2	153	436	728	1,103	1,257	1,370	747	552	221	66	**6,673**
1979/80	34	31	120	420	568	900	1,144	1,175	895	414	137	94	**5,932**
1980/81	1	0	82	466	813	1,211	1,407	835	886	416	195	19	**6,331**
1981/82	2	5	132	485	706	1,105	1,426	1,034	896	554	147	68	**6,560**
1982/83	17	55	112	390	619	870	1,158	992	805	569	292	41	**5,920**
1983/84	7	11	119	392	659	1,169	1,297	837	1,052	493	247	34	**6,317**
1984/85	7	6	148	219	719	852	1,342	981	799	421	162	78	**5,734**
1985/86	4	11	127	376	610	1,181	1,163	1,083	777	467	140	61	**6,000**

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
ERIE													
1976/77	28	42	163	519	920	1,269	1,620	1,116	751	519	249	126	7,322
1977/78	9	51	110	477	636	1,131	1,395	1,408	1,143	688	303	84	7,435
1978/79	15	2	125	481	723	1,046	1,406	1,424	874	678	369	106	7,249
1979/80	36	17	84	378	634	939	1,188	1,275	1,045	644	299	161	6,700
1980/81	12	2	108	520	775	1,156	1,400	967	982	523	345	42	6,832
1981/82	3	6	153	467	694	1,034	1,413	1,159	942	672	158	123	6,824
1982/83	11	47	126	336	605	762	1,062	933	814	585	312	67	5,660
1983/84	10	0	89	336	591	1,207	1,338	847	1,123	539	360	25	6,465
1984/85	11	5	141	262	673	853	1,337	1,088	846	423	202	87	5,928
1985/86	5	3	75	316	558	1,164	1,152	1,056	811	502	207	74	5,923
HARRISBURG													
1976/77	0	5	75	418	756	1,075	1,387	966	588	340	106	32	5,748
1977/78	0	5	35	377	562	1,029	1,196	1,175	810	414	173	17	5,793
1978/79	14	0	48	321	544	876	1,104	1,182	611	435	123	26	5,284
1979/80	12	14	71	393	536	844	1,070	1,033	799	361	103	48	5,284
1980/81	0	0	57	411	761	1,091	1,277	844	809	339	147	6	5,742
1981/82	0	1	94	437	599	1,021	1,304	948	812	518	128	61	5,923
1982/83	7	12	67	318	520	725	985	876	686	468	221	25	4,910
1983/84	0	2	103	362	628	1,117	1,238	817	962	502	240	11	5,982
1984/85	10	0	105	131	627	724	1,143	849	627	292	87	16	4,611
1985/86	0	0	41	237	508	1,049	1,038	974	664	349	89	9	4,958
PHILADELPHIA													
1976/77	0	2	42	387	743	1,069	1,390	873	505	258	73	36	5,378
1977/78	0	0	24	328	558	998	1,139	1,121	797	423	161	10	5,559
1978/79	5	0	41	296	507	811	999	1,170	556	378	38	17	4,818
1979/80	4	7	28	324	439	823	1,021	1,016	763	301	72	17	4,815
1980/81	0	0	22	320	646	999	1,222	752	768	309	129	4	5,171
1981/82	0	0	58	364	576	936	1,243	850	714	440	50	25	5,256
1982/83	0	8	31	277	497	730	951	861	653	423	128	2	4,561
1983/84	0	0	70	283	540	981	1,196	756	911	438	181	13	5,369
1984/85	0	0	92	138	613	709	1,161	824	627	306	89	9	4,568
1985/86	0	0	38	187	407	975	990	914	628	345	77	6	4,567

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
PITTSBURGH													
1976/77	15	59	159	587	953	1,268	1,655	1,060	658	436	138	102	7,090
1977/78	11	41	78	442	583	1,043	1,307	1,229	860	412	208	38	6,252
1978/79	4	3	80	485	656	993	1,346	1,311	671	458	219	38	6,264
1979/80	23	26	111	438	601	935	1,175	1,177	906	500	172	71	6,135
1980/81	0	5	48	476	787	1,117	1,372	936	904	391	223	18	6,277
1981/82	3	10	159	475	736	1,098	1,361	1,017	819	586	82	67	6,413
1982/83	9	23	119	336	605	770	1,080	904	746	535	280	44	5,451
1983/84	10	2	126	365	639	1,223	1,293	823	1,008	471	305	16	6,281
1984/85	12	7	165	214	734	790	1,322	1,038	701	334	163	65	5,545
1985/86	3	9	116	300	531	1,160	1,131	936	737	368	148	37	5,476
WILLIAMSPORT													
1976/77	0	12	121	478	855	1,201	1,547	1,008	624	366	119	38	6,369
1977/78	4	15	46	444	588	1,126	1,300	1,239	938	495	190	28	6,413
1978/79	9	0	76	381	633	998	1,179	1,264	696	497	167	40	5,940
1979/80	15	19	131	438	601	919	1,141	1,134	863	405	139	77	5,882
1980/81	0	0	65	472	830	1,232	1,378	886	877	391	130	7	6,268
1981/82	0	0	97	416	677	1,070	1,408	1,020	903	558	123	57	6,329
1982/83	15	45	108	393	632	865	1,101	934	736	511	271	50	5,661
1983/84	14	8	159	461	741	1,182	1,360	873	1,069	517	288	30	6,702
1984/85	6	6	171	257	733	901	1,282	978	765	377	151	59	5,686
1985/86	4	6	108	369	590	1,142	1,162	1,043	749	412	117	41	5,743

Sources: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Data and Information Service, *Historical Climatology Series No. 5-1, State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population; Local Climatological Data, Annual Summary with Comparative Data.*

2. CONSUMPTION

This section presents an overview of Pennsylvania's annual energy use from 1970 to 1984. The information is disaggregated by fuel type and by economic sector.

In 1984, total energy consumption in Pennsylvania rose 5.6 percent over 1983 to 3,428.3 trillion Btu. This was the first increase in total energy use in five years. Total energy consumption reached its peak in 1979 at 4,190.6 trillion Btu. By 1984, it had decreased by a compound annual rate of 3.9 percent. This was only 6.7 percent higher than the amount of energy consumed in Pennsylvania during 1960.

Coal continued to be Pennsylvania's most important source of energy. In 1984, coal consumption increased by 8.5 percent over 1983 to 1,441.1 trillion Btu and provided 42.0 percent of the state's total energy used. Most coal is used in the electric utility sector, which burned 993.4 trillion Btu of coal in 1984, an increase of 2.0 percent over the 1983 level. Although Pennsylvania consumed more coal than any other state in 1984, its consumption was 5.8 percent less than in 1960 and 19.9 percent less than in the peak consumption year of 1973.

Petroleum is Pennsylvania's second major source of energy. Petroleum use was 1,234.2 trillion Btu in 1984, changing very little from 1983. Usage fell from 38.1 to 36.0 percent of total energy used in Pennsylvania. Consumption of petroleum by the transportation sector, its largest end-user, increased 1.6 percent from 1983 to 720 trillion Btu in 1984. The industrial sector, which uses the second largest amount of petroleum, increased its use for the first time in five years to 223.5 trillion Btu in 1984.

Natural gas use increased 5.0 percent in 1984 to 697 trillion Btu, accounting for 20.3 percent of Pennsylvania's total energy consumption. The use of natural gas increased in all sectors between 1983 and 1984. Most natural gas is consumed by the residential and industrial sectors. For 1984, natural gas consumption was 273.2 trillion Btu and 255.6 trillion Btu, respectively, for these sectors.

Nuclear power consumption increased 45.1 percent over 1983 to 232.9 trillion Btu in 1984. A dramatic increase in consumption occurred between 1973 and 1975. The use of nuclear power rose from 3.9 trillion Btu to 174.8 trillion Btu and continued to increase to a high of 244.3 trillion Btu. The accident at Three Mile Island in 1979 resulted in a two year decline in nuclear power consumption by about 46.0 percent. Between 1980 and 1984, consumption increased 15.3 percent annually.

Hydro-electric power consumption rose from 12.2 trillion Btu in 1983 to 15 trillion Btu in 1984, an increase of 23.0 percent. Usage has fluctuated between 1960 and 1984 from

a high of 20.0 trillion Btu in 1967 to a low of 6.9 trillion Btu in 1981.

Residential energy consumption increased by 2.4 percent in 1984. The residential sector used the second largest amount of all energy consumed in the state, 807.3 trillion Btu. The predominant source of energy consumed by the residential sector over the past twenty-five years has been natural gas. Natural gas consumption increased 5.0 percent over the 1983 level to 273.2 trillion Btu in 1984. Its share of total residential energy use for that year was 33.8 percent. After decreasing for six consecutive years, petroleum use rose slightly in 1984 to 137.1 trillion Btu. Consumption of electricity increased to an all-time high of 113.2 trillion Btu, 2.6 percent over 1983. Coal use rose from 18.4 trillion Btu in 1983 to 19.7 trillion Btu in 1984.

Commercial energy consumption grew 4.2 percent from 1983 to a peak of 471.9 trillion Btu in 1984. Natural gas, the major energy source, increased 9.4 percent to 130 trillion Btu in 1984. The use of natural gas in the commercial sector has more than doubled since 1960. Of the total amount of energy used, it provided 27.5 percent. Electricity use by this sector increased 5.1 percent to an all-time high of 82.5 trillion Btu in 1984. Its share of total commercial energy rose from 8.0 percent in 1960 to 17.5 percent in 1984. Coal usage increased 2.8 percent over 1983 to 18.4 trillion Btu. Petroleum consumption in this sector, on the other hand, declined 2.8 percent to 48.4 trillion Btu.

Pennsylvania's industrial sector, the leading energy consuming sector, used 10.0 percent more energy in 1984 than in 1983. Consumption increased to 1,390.3 trillion Btu. This was the first increase in total industrial energy consumption in five years. Coal, which provides the largest portion of the state's industrial energy needs, experienced an increase of 28.6 percent in use over 1983 to 409.5 trillion Btu. The consumption of natural gas, which rose to 255.6 trillion Btu in 1984, was slightly higher than the 1983 level. The use of petroleum products rose to 223.5 trillion Btu in 1984, the first increase in five years. Electricity use increased 7.4 percent from 140.1 trillion Btu in 1983 to 150.5 trillion Btu in 1984.

In the transportation sector, energy use climbed 2.2 percent in 1984 to 758.8 trillion Btu. Consumption was 42.7 percent higher than the 1960 level of 531.7 trillion Btu. The peak year for the transportation sector was in 1978, when consumption reached 864.4 trillion Btu. Petroleum, the major source of energy consumed by the transportation section, showed an upward trend prior to 1978 when it peaked at 839.2 trillion Btu. From 1978 to 1982, there was a 17.4

percent decline. Since then, petroleum consumption has increased 3.8 percent to 720.0 trillion Btu in 1984.

Energy input at electric utilities in Pennsylvania grew 5.9 percent in 1984 to 1,349.3 trillion Btu. Although coal provided 73.6 percent of electric utilities fuel requirements in 1984, the proportion remains somewhat lower than it was before nuclear power became a major contributor in the mid-1970's. Coal use increased 2.0 percent over 1983 to 993.4 trillion Btu. The use of nuclear power, the second largest contributor, rose from 160.5 trillion Btu in 1983 to 232.9 trillion Btu in 1984, an increase of 45.1 percent. Nuclear power accounted for 17.3 percent of the total electric utility input in 1984. Petroleum use at electric utilities dropped from 125.6 trillion Btu in 1983 to 105.3 trillion Btu in 1984, a decline of 16.2 percent.

TABLE 9

PENNSYLVANIA ENERGY CONSUMPTION BY FUEL TYPE
1960 - 1984
(Trillions of Btus)

Year	Coal	Natural Gas[1]	Petroleum	Nuclear Electric Power	Hydro-Electric Power[2]	Net Interstate Sales of Electricity[3]	Total
1960	1,530.6	540.1	1,126.0	2.7	19.6	(5.4)	3,213.6
1961	1,431.7	547.7	1,099.1	3.5	15.9	2.1	3,100.0
1962	1,477.7	568.7	1,150.8	3.7	16.0	(2.2)	3,214.7
1963	1,538.6	604.2	1,179.0	4.2	13.4	3.1	3,342.5
1964	1,699.1	628.4	1,203.3	0.3	13.4	2.9	3,547.4
1965	1,751.4	649.1	1,252.0	3.7	13.9	16.3	3,686.4
1966	1,746.7	699.5	1,292.6	6.1	15.0	27.4	3,787.3
1967	1,701.3	700.2	1,318.6	7.0	20.0	28.7	3,775.8
1968	1,726.0	740.2	1,384.1	5.3	12.3	45.2	3,913.1
1969	1,629.1	789.7	1,454.0	4.6	9.6	47.0	3,934.0
1970	1,699.2	796.3	1,536.8	5.1	14.3	9.8	4,061.5
1971	1,619.6	827.0	1,562.1	4.8	8.2	(24.6)	3,997.1
1972	1,662.6	851.3	1,656.7	3.1	15.9	(52.8)	4,136.8
1973	1,798.6	799.0	1,663.4	3.9	14.3	(39.0)	4,240.2
1974	1,661.6	732.7	1,603.9	78.1	14.5	(16.5)	4,074.3
1975	1,646.8	666.8	1,466.5	174.8	16.4	(116.5)	3,854.8
1976	1,676.0	727.1	1,636.1	181.4	14.7	(124.4)	4,110.9
1977	1,570.8	681.0	1,731.5	191.9	12.6	(111.4)	4,076.4
1978	1,565.1	684.6	1,733.3	244.3	7.9	(165.0)	4,070.2
1979	1,748.8	754.2	1,649.3	204.5	12.7	(178.9)	4,190.6
1980	1,623.8	794.4	1,465.9	131.9	7.6	(117.7)	3,905.9
1981	1,480.0	804.3	1,312.3	157.5	6.9	(60.9)	3,700.1
1982	1,283.6	712.7	1,197.0	182.4	19.1	(143.1)	3,251.7
1983	1,328.4	663.9	1,236.9	160.5	12.2	(155.0)	3,246.9
1984	1,441.1	697.0	1,234.2	232.9	15.0	(191.9)	3,428.3

[1] *Includes supplemental gaseous fuels.*

[2] *Includes industrial and electric utility production, and net imports of electricity.*

[3] *This is the difference between the amounts of energy in the electricity sold within the state and the energy input at the electric utilities within the state. The net interstate sales, therefore, include associated electrical system energy losses. A positive number indicates that more electricity came into the state than went out of the state during the year; conversely, a negative number indicates that more electricity went out of the state than came into the state.*

Note: Parentheses denote negative numbers.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 6

PENNSYLVANIA ENERGY CONSUMPTION BY FUEL TYPE FOR SELECTED YEARS

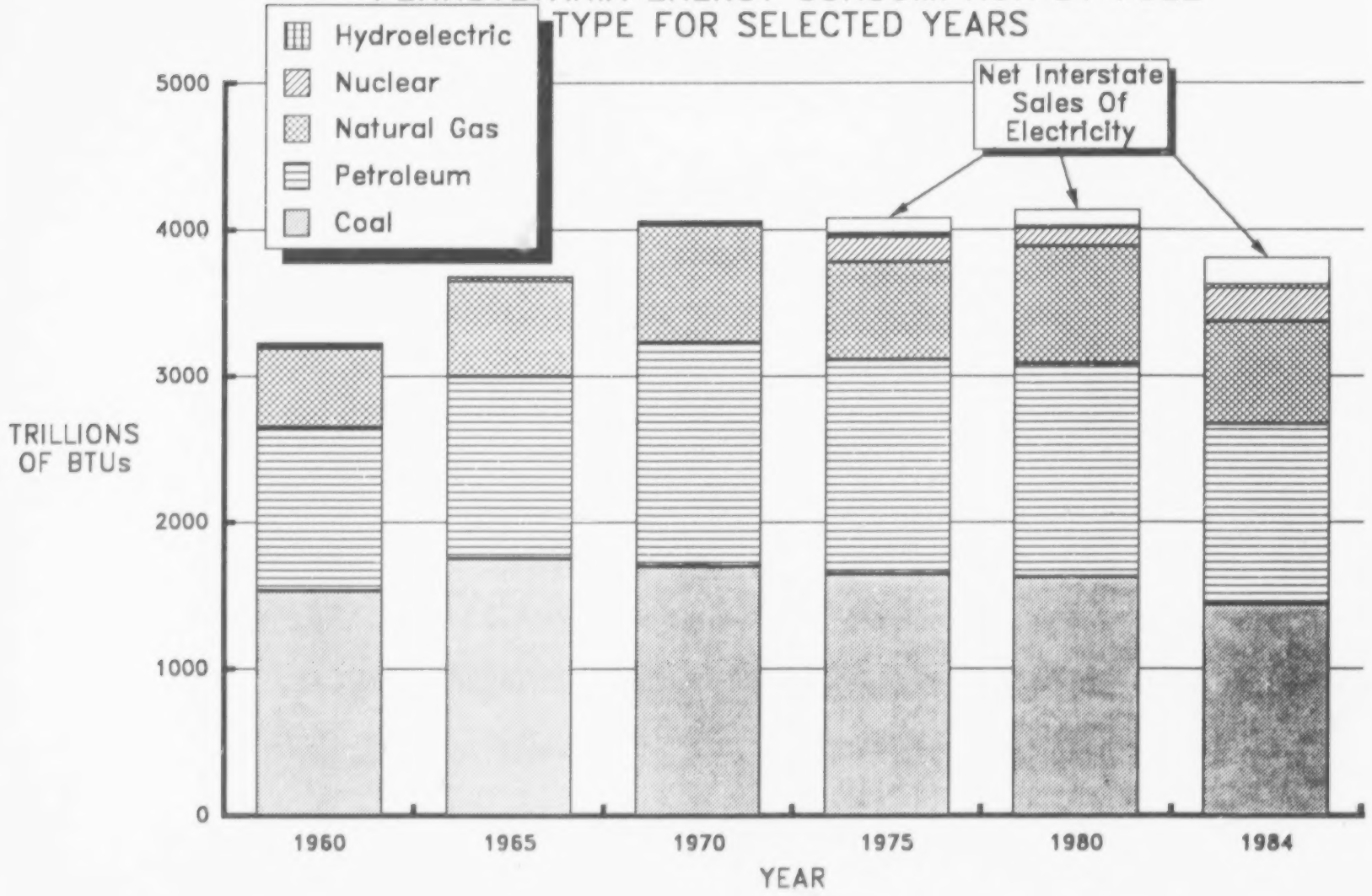


TABLE 10

PENNSYLVANIA ENERGY CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Trillions of Btus)

Year	Residential	Commercial	Industrial	Transportation	Total
1960	662.7	315.0	1,704.2	531.7	3,213.6
1961	660.7	308.2	1,619.0	512.1	3,100.0
1962	678.5	308.7	1,699.4	528.3	3,214.9
1963	683.7	309.0	1,799.3	550.6	3,342.6
1964	682.5	312.3	1,990.0	562.6	3,547.4
1965	698.0	322.0	2,098.5	567.9	3,686.4
1966	718.8	331.2	2,147.2	589.9	3,787.1
1967	744.3	332.9	2,073.2	625.2	3,775.6
1968	774.0	345.4	2,118.7	675.1	3,913.2
1969	797.2	359.5	2,091.6	685.7	3,934.0
1970	830.3	380.1	2,135.7	715.5	4,061.6
1971	852.8	397.5	2,003.1	743.8	3,997.2
1972	875.1	413.0	2,052.4	796.4	4,136.9
1973	876.4	419.9	2,133.6	810.3	4,240.2
1974	835.0	389.7	2,069.6	780.1	4,074.4
1975	827.0	402.5	1,858.4	766.8	3,854.7
1976	877.2	442.4	1,955.3	836.0	4,110.9
1977	880.9	442.7	1,897.8	854.9	4,076.3
1978	885.9	449.5	1,870.4	864.3	4,070.1
1979	881.5	435.3	2,025.3	848.3	4,190.4
1980	867.3	440.6	1,780.6	817.4	3,905.9
1981	841.3	455.3	1,631.6	771.8	3,700.0
1982	805.4	451.9	1,266.7	727.8	3,251.8
1983	788.1	452.8	1,263.8	742.3	3,247.0
1984	807.3	471.9	1,390.2	758.9	3,428.3

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 7

PENNSYLVANIA ENERGY CONSUMPTION BY
END-USE SECTOR FOR SELECTED YEARS

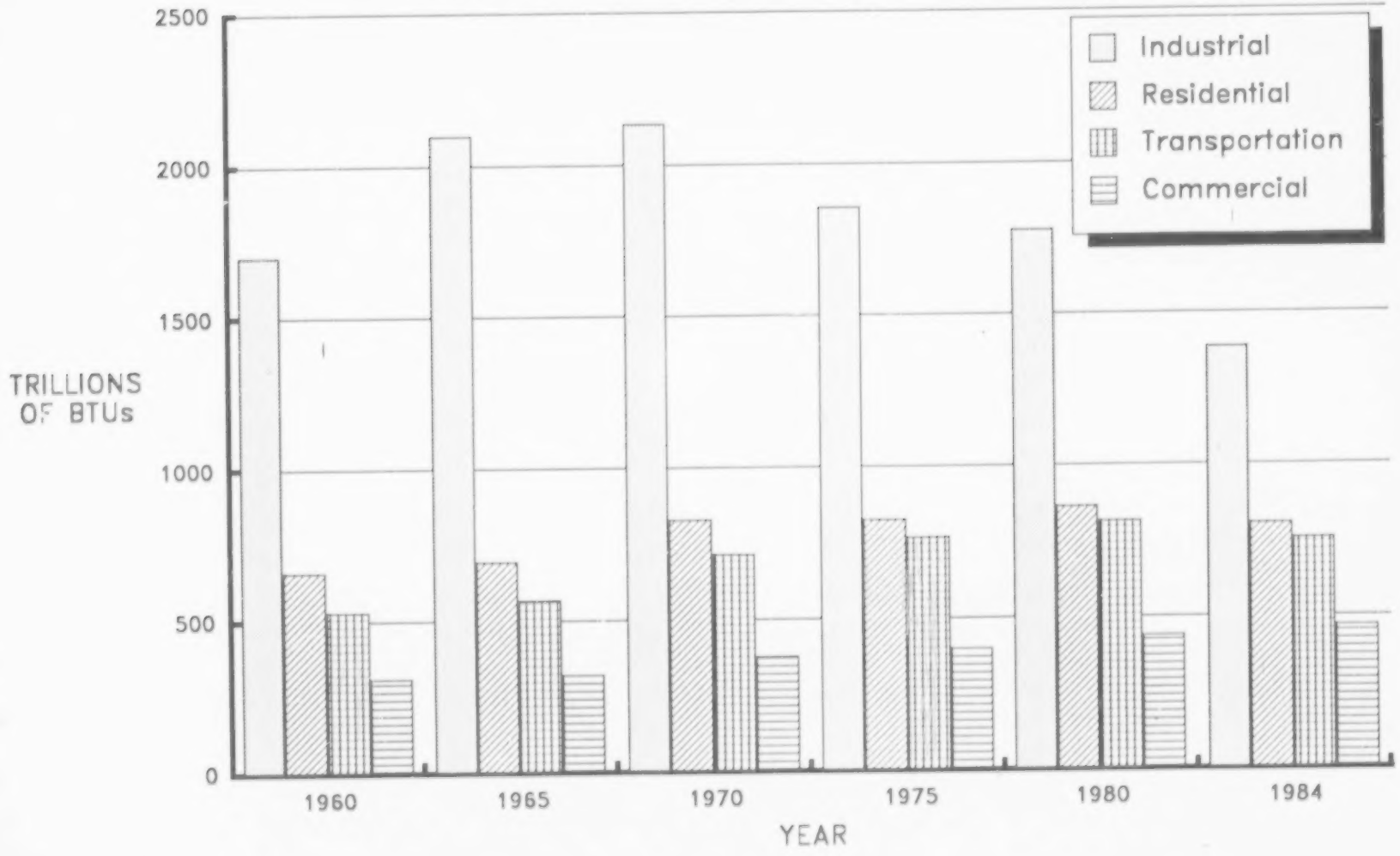


TABLE 11

PENNSYLVANIA ENERGY CONSUMPTION BY THE RESIDENTIAL SECTOR
1960 - 1984
(Trillions of Btus)

Year	Coal	Natural Gas[1]	Petroleum	Electricity	Electrical Systems Energy Losses[2]	Total
1960	124.1	240.2	166.4	37.9	94.2	662.8
1961	113.0	245.6	164.0	40.2	98.0	660.8
1962	98.2	253.6	183.9	41.9	100.8	678.4
1963	90.4	258.0	185.6	44.2	105.5	683.7
1964	85.5	259.8	178.9	46.9	111.4	682.5
1965	76.9	263.8	186.4	50.5	120.4	698.0
1966	66.1	283.7	183.0	54.8	131.2	718.8
1967	57.7	288.8	196.7	59.4	141.7	744.3
1968	53.5	294.8	203.5	65.7	156.5	774.0
1969	47.5	304.2	202.5	71.8	171.2	797.2
1970	47.1	306.2	208.2	78.5	190.3	830.3
1971	45.0	313.8	210.5	82.9	200.5	852.7
1972	33.6	313.7	229.4	87.7	210.6	875.0
1973	34.5	298.4	225.8	93.6	224.2	876.5
1974	28.1	278.4	207.6	93.3	227.6	835.0
1975	23.3	278.1	203.3	94.4	227.9	827.0
1976	22.6	296.0	223.3	98.4	237.0	877.3
1977	22.6	282.6	223.9	103.1	248.7	880.9
1978	23.3	290.7	210.0	105.0	256.8	885.8
1979	16.6	293.8	205.3	107.2	258.6	881.5
1980	18.7	295.2	181.4	108.4	263.5	867.2
1981	23.3	292.9	158.9	108.2	257.9	841.2
1982	21.4	279.5	130.5	107.4	257.7	805.5
1983	18.4	260.1	135.4	110.3	263.9	788.1
1984	19.7	273.2	137.1	113.2	264.1	807.3

[1] *Includes supplemental gaseous fuels.*
[2] *Incurred in the generation, transmission, and distribution of electricity plus plant use and unaccounted for electrical system energy losses.*

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 8

PENNSYLVANIA ENERGY CONSUMPTION BY THE RESIDENTIAL SECTOR FOR SELECTED YEARS

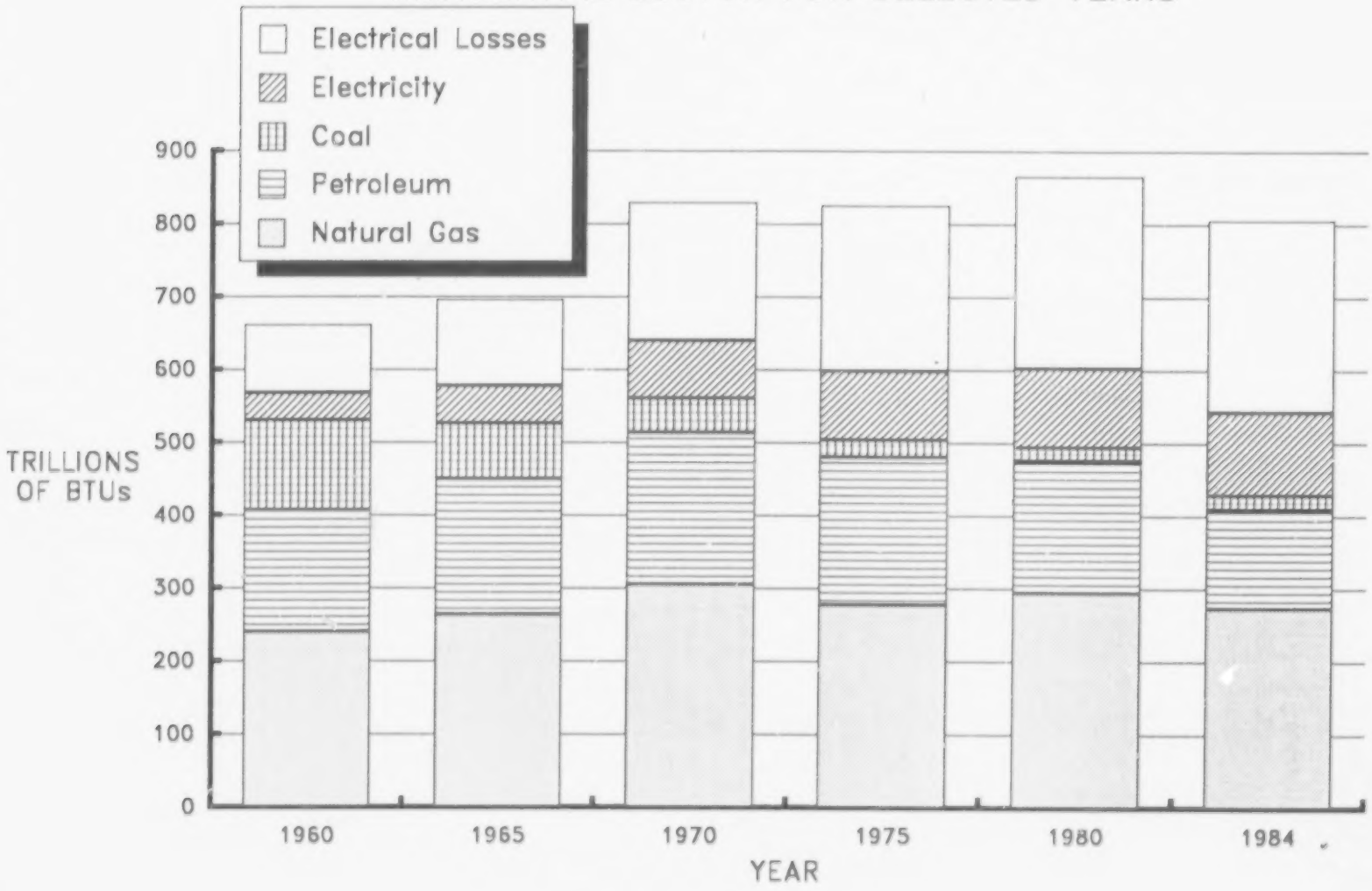


TABLE 12

PENNSYLVANIA ENERGY CONSUMPTION BY THE COMMERCIAL SECTOR
1960 - 1984
(Trillions of Btus)

Year	Coal	Natural Gas[1]	Petroleum	Electricity	Electrical System Energy Losses[2]	Total
1960	95.6	58.1	73.2	25.3	62.9	315.1
1961	86.7	60.9	70.0	26.4	64.3	308.3
1962	76.1	64.0	74.4	27.7	66.6	308.8
1963	69.2	66.0	76.1	28.8	68.9	309.0
1964	64.3	66.8	77.4	30.7	73.1	312.3
1965	59.4	69.7	81.7	32.9	78.3	322.0
1966	52.4	76.2	83.4	35.1	84.1	331.2
1967	45.9	85.3	76.4	37.0	88.2	332.8
1968	42.0	90.3	77.1	40.2	95.7	345.3
1969	37.7	98.7	77.1	43.1	102.9	359.5
1970	38.3	102.4	80.5	46.4	112.5	380.1
1971	36.7	113.4	78.8	49.3	119.2	397.4
1972	26.6	125.8	82.3	52.4	125.9	413.0
1973	29.9	118.6	81.4	55.9	134.0	419.8
1974	22.5	105.0	72.1	55.3	134.8	389.7
1975	18.8	101.0	64.1	64.1	154.7	402.7
1976	18.3	126.9	68.7	67.1	161.4	442.4
1977	17.9	114.0	72.2	69.9	168.8	442.8
1978	23.1	112.4	69.0	71.1	173.9	449.5
1979	15.1	113.5	59.7	72.4	174.6	435.3
1980	16.8	121.3	47.5	74.3	180.7	440.6
1981	19.7	131.8	45.8	76.3	181.8	455.4
1982	20.9	128.8	39.5	77.2	185.4	451.8
1983	17.9	118.8	49.8	78.5	187.8	452.8
1984	18.4	130.0	48.4	82.5	192.6	471.9

[1] *Includes supplemental gaseous fuels.*
[2] *Incurred in the generation, transmissions, and distribution of electricity plus plant use and unaccounted for electrical system energy losses.*

Source: U. S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 9

PENNSYLVANIA ENERGY CONSUMPTION BY THE COMMERCIAL SECTOR FOR SELECTED YEARS

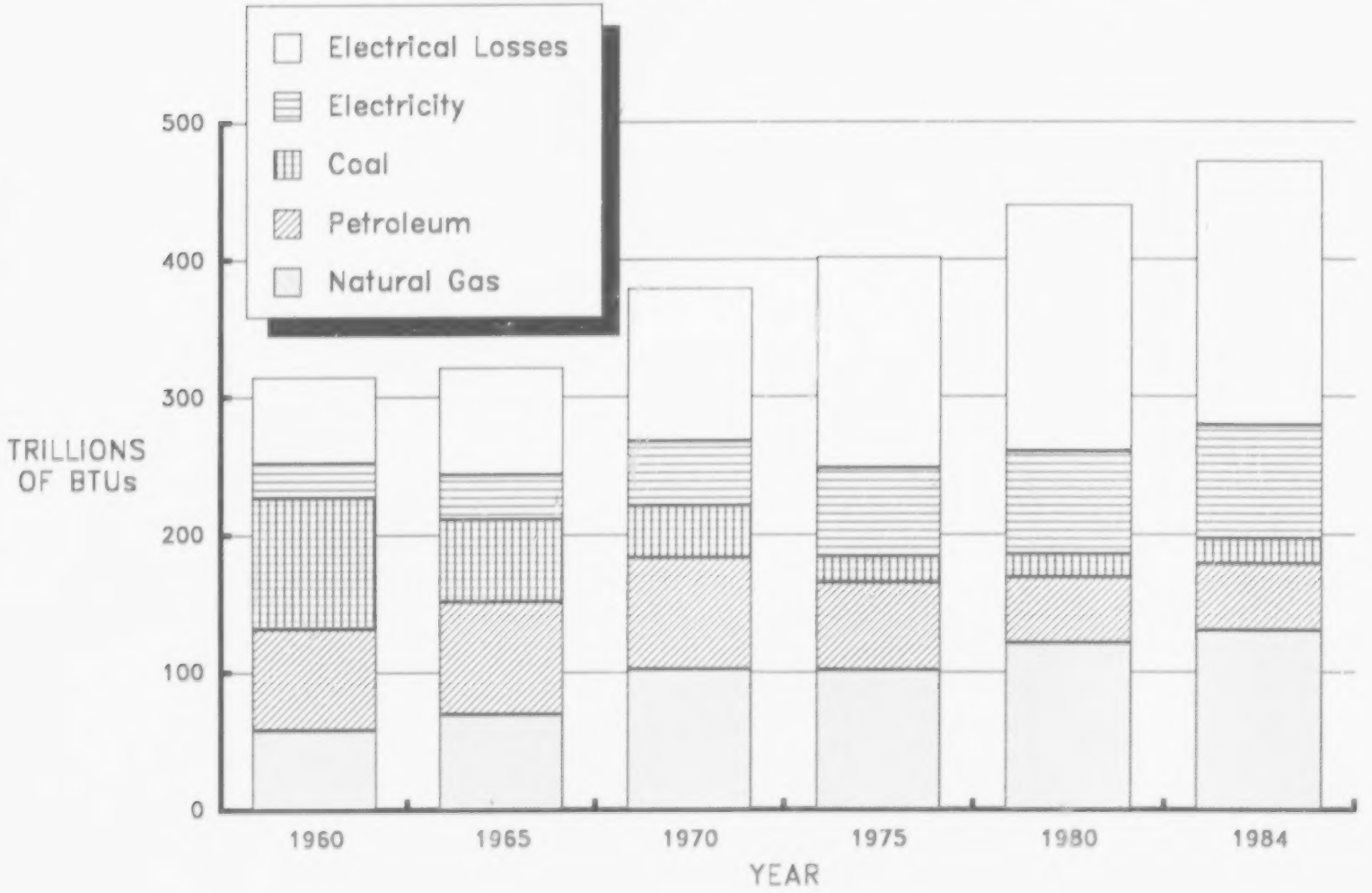


TABLE 13

PENNSYLVANIA ENERGY CONSUMPTION BY THE INDUSTRIAL SECTOR
1960 - 1984
(Trillions of Btus)

Year	Coal	Natural Gas[1]	Petroleum	Hydro-Electric Power	Electricity	Electrical Systems Energy Losses[2]	Total
1960	873.3	220.0	364.5	0.2	70.6	175.6	1,704.2
1961	795.0	225.4	349.5	0.2	72.4	176.5	1,619.0
1962	837.4	233.5	364.7	0.2	77.4	186.2	1,699.4
1963	892.3	258.6	366.4	0.1	83.2	198.6	1,799.2
1964	1,012.9	278.2	387.1	0.2	92.3	219.5	1,990.2
1965	1,053.4	294.4	414.9	0.2	99.2	236.5	2,098.6
1966	1,045.9	316.7	419.3	0.2	107.6	257.6	2,147.3
1967	1,006.4	299.2	394.7	0.2	110.1	262.6	2,073.2
1968	998.2	326.3	388.9	0.1	119.8	285.3	2,118.6
1969	911.1	353.4	387.4	0.2	129.8	309.7	2,091.6
1970	932.2	350.5	397.1	0.1	133.0	322.6	2,135.5
1971	781.7	361.0	395.6	0.1	136.0	328.9	2,003.3
1972	769.7	377.9	410.1	NM	145.5	349.3	2,052.5
1973	804.3	356.6	437.4	NM	157.6	377.7	2,133.6
1974	789.0	319.9	422.6	NM	156.5	381.7	2,069.7
1975	743.2	268.5	366.2	NM	140.8	339.7	1,858.4
1976	745.4	281.8	421.1	NM	148.8	358.2	1,955.3
1977	667.1	260.4	448.0	NM	153.0	369.3	1,897.8
1978	653.3	256.1	420.7	NM	156.8	383.5	1,870.4
1979	725.5	318.3	423.2	NM	163.6	394.8	2,025.4
1980	568.4	344.7	328.4	NM	157.1	382.0	1,780.6
1981	487.8	341.6	264.2	NM	159.0	379.0	1,631.6
1982	277.7	270.8	250.8	NM	137.4	329.9	1,266.6
1983	318.4	253.2	217.2	NM	140.1	335.0	1,263.9
1984	409.5	255.6	223.5	NM	150.5	351.2	1,390.3

[1] *Includes supplemental gaseous fuels.*

[2] *Incurred in the generation, transmission, and distribution of electricity plus plant use and unaccounted for electrical system energy losses.*

NM Not meaningful. Btu value less than 0.05 and physical unit value less than 0.5.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 10

PENNSYLVANIA ENERGY CONSUMPTION BY THE INDUSTRIAL SECTOR FOR SELECTED YEARS

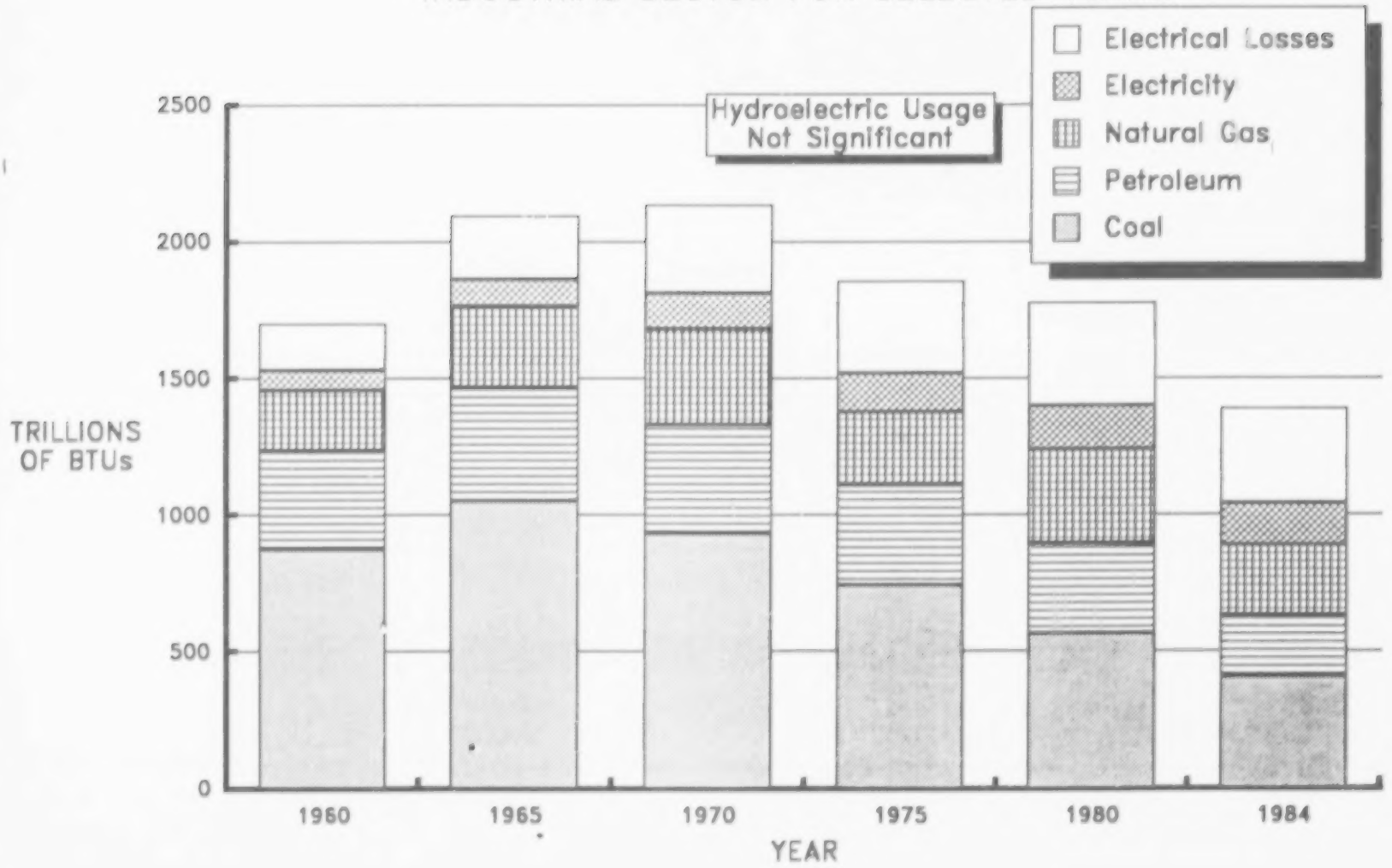


TABLE 14

PENNSYLVANIA ENERGY CONSUMPTION BY THE TRANSPORTATION SECTOR
1960 - 1984
(Trillions of Btus)

Year	Coal[1]	Natural Gas[2]	Petroleum	Electricity	Electrical System Energy Losses[3]	Total
1960	14.0	15.6	501.8	0.1	0.2	531.7
1961	3.4	13.1	495.4	0.1	0.2	512.2
1962	3.1	15.7	509.2	0.1	0.2	528.3
1963	3.1	17.4	529.9	0.1	0.2	550.7
1964	3.5	18.8	540.1	0.1	0.2	562.7
1965	3.2	20.0	544.5	0.1	0.2	568.0
1966	2.9	21.7	565.1	0.1	0.2	590.0
1967	2.2	24.4	598.4	0.1	0.2	625.3
1968	2.0	24.2	648.6	0.1	0.1	675.0
1969	1.4	26.0	658.1	0.1	0.1	685.7
1970	1.3	27.5	686.4	0.1	0.1	715.4
1971	0.9	28.8	713.9	0.1	0.1	743.8
1972	0.7	28.3	767.2	0.1	0.1	796.4
1973	0.5	22.8	786.8	0.1	0.1	810.3
1974	0.4	21.4	758.1	0.1	0.1	780.1
1975	0.1	18.1	748.4	0.1	0.2	766.9
1976	0.1	22.0	813.7	0.1	0.2	836.1
1977	0.0	23.7	831.0	0.1	0.2	855.0
1978	0.0	24.9	839.2	0.1	0.2	864.4
1979	0.0	26.7	821.4	0.1	0.2	848.4
1980	0.0	30.2	785.5	0.5	1.3	817.5
1981	0.0	34.6	734.9	0.7	1.6	771.8
1982	0.0	32.0	693.5	0.7	1.6	727.8
1983	0.0	30.1	708.9	1.0	2.3	742.3
1984	0.0	35.5	720.0	1.0	2.3	758.8

[1] *No anthracite is consumed by the transportation sector.*
[2] *Includes supplemental gaseous fuels.*
[3] *Incurred in the generation, transmission, and distribution of electricity plus plant use and unaccounted for electrical system energy losses.*

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 11

PENNSYLVANIA ENERGY CONSUMPTION BY THE TRANSPORTATION SECTOR FOR SELECTED YEARS

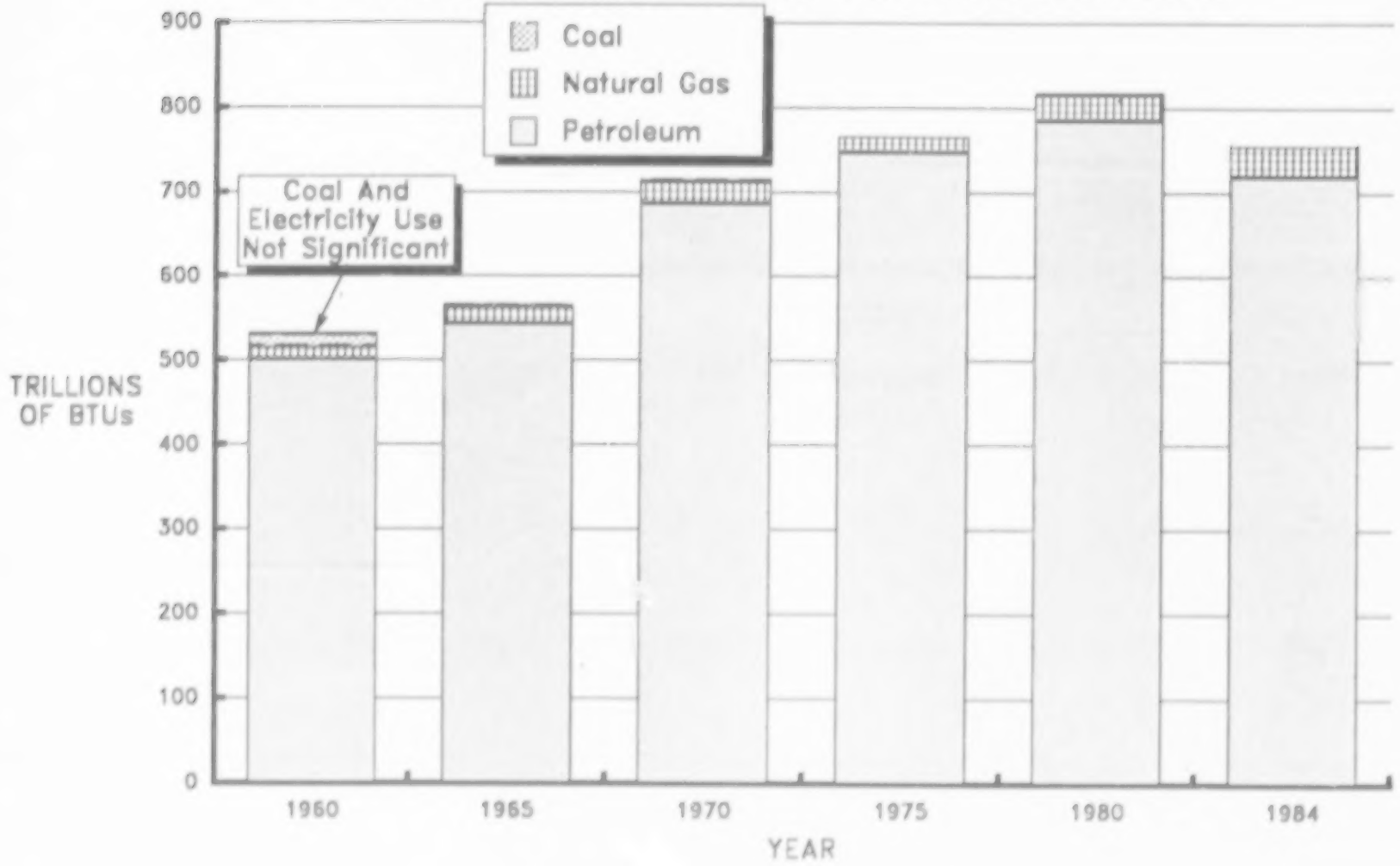


TABLE 15

PENNSYLVANIA ENERGY INPUT AT ELECTRIC UTILITIES
1960 - 1984
(Trillions of Btus)

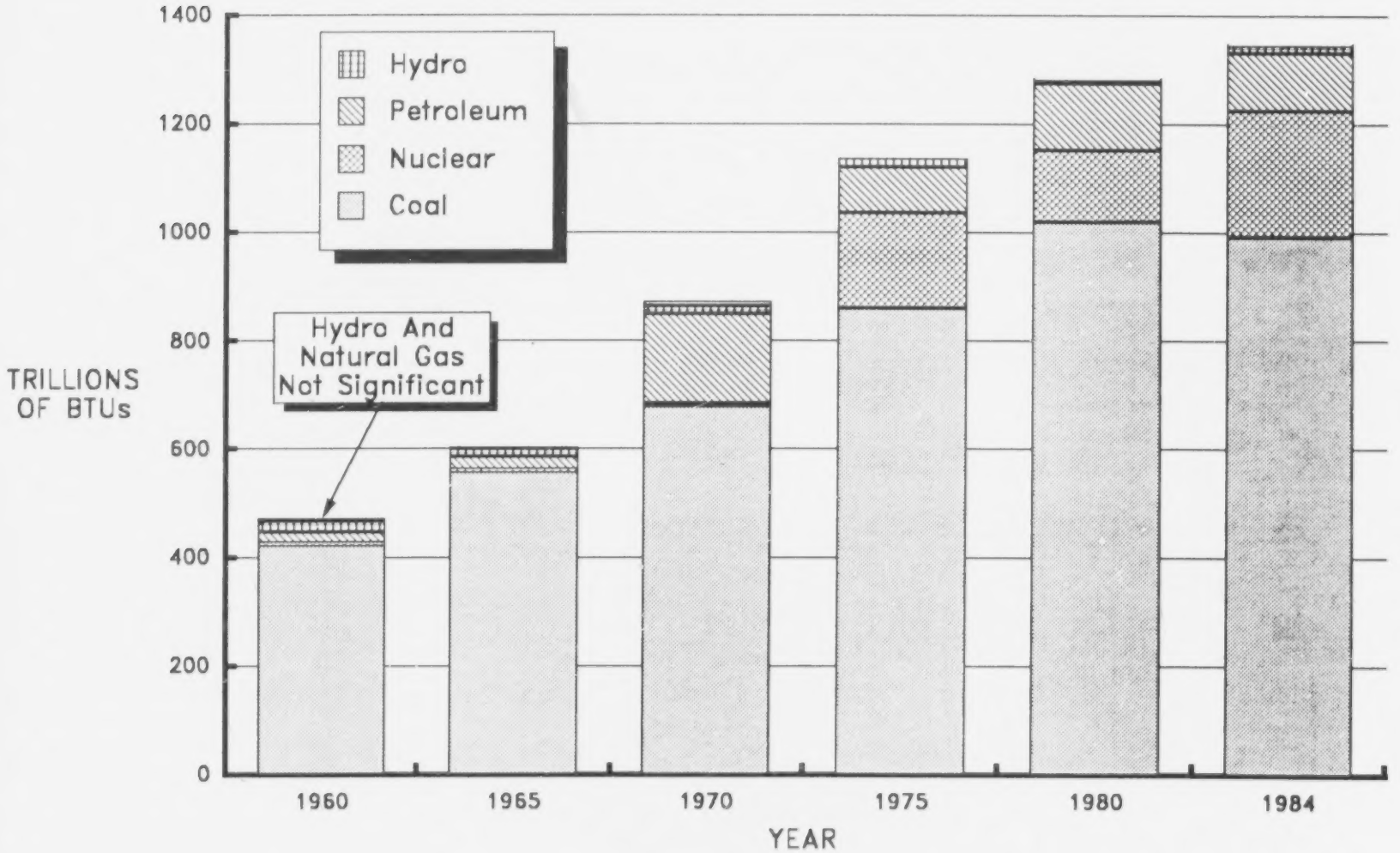
Year	Coal	Natural Gas[1]	Petroleum	Hydro-Electric Power[2]	Nuclear Electric Power	Total
1960	423.7	6.2	20.1	19.5	2.7	472.2
1961	433.7	2.7	20.2	15.7	3.5	475.8
1962	462.8	2.0	18.6	15.9	3.7	503.0
1963	483.6	4.2	21.0	13.3	4.2	526.3
1964	532.9	4.9	19.9	13.3	0.3	571.3
1965	558.5	1.3	24.5	13.7	3.7	601.7
1966	579.3	1.2	41.8	14.8	6.1	643.2
1967	589.0	2.5	52.4	19.8	7.0	670.7
1968	630.3	4.5	66.1	12.1	5.3	718.3
1969	631.5	7.4	129.0	9.4	4.6	781.9
1970	680.3	9.6	164.5	14.2	5.1	873.7
1971	755.4	10.0	163.3	8.1	4.8	941.6
1972	832.0	5.6	167.8	15.9	3.1	1.024.4
1973	929.4	2.6	132.1	14.2	3.9	1.082.2
1974	821.7	8.0	143.5	14.5	78.1	1.065.8
1975	861.5	1.2	84.5	16.4	174.8	1.138.4
1976	889.6	0.5	109.3	14.7	181.4	1.195.5
1977	863.1	0.3	156.5	12.6	191.9	1.224.4
1978	865.3	0.5	194.4	7.9	244.3	1.312.4
1979	991.5	1.9	139.6	12.6	204.5	1.350.1
1980	1,019.8	3.0	123.2	7.6	131.9	1.285.5
1981	949.1	3.4	108.5	6.9	157.5	1.225.4
1982	963.6	1.6	73.7	19.1	182.4	1.240.4
1983	973.7	1.7	125.6	12.2	160.5	1.273.7
1984	993.4	2.7	105.3	15.0	232.9	1.349.3

[1] *Includes supplemental gaseous fuels.*
[2] *Includes net imports of electricity.*

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 12

ENERGY INPUT BY PENNSYLVANIA
ELECTRIC UTILITIES FOR SELECTED YEARS



3. PETROLEUM

This section features historical information on the U. S. petroleum supply and disposition. The section also presents petroleum consumption data for Pennsylvania from 1960 to 1984. Petroleum use is disaggregated by fuel type and by specific end-use sector.

Petroleum products supplied is the sum of the product supplied for each petroleum product, crude oil, unfinished oils, and gasoline blending components. For each of these, except crude oil, product supplied is calculated by adding refinery production, natural gas plant liquid production, new supply of other liquid imports, and stock withdrawals; and subtracting stock additions, refinery inputs, and exports. Petroleum consumption in the U. S. (measured as "petroleum products supplied") was unchanged in 1985 from the 1984 level of 15.7 million barrels per day.

Domestic crude oil production averaged 9 million barrels per day in 1985, about the same as the 1984 rate.

Net imports of crude oil and petroleum products into the United States are defined as gross imports, including imports for the Strategic Petroleum Reserve, minus exports. Net imports averaged 4.3 million barrels per day in 1985, a decrease of 0.4 million barrels per day from 1984 and also the lowest level since 1971. This decrease represents a reversal of the upswing in net imports seen during 1983 and 1984 and is attributable to withdrawals from industry inventories, a slowdown in the buildup of the Strategic Petroleum Reserve, and the expectation of continued reductions in crude oil prices.

Crude oil imports averaged 3.2 million barrels per day, down 0.2 million barrels per day from the 1984 level. They were down over 50 percent from their peak level of 6.6 million barrels per day reported in 1977.

Exports of crude oil and petroleum products increased over 8.3 percent to 0.8 million barrels per day, up from 0.7 million barrels per day in 1984.

U. S. dependence on imports from members of the Organization of Petroleum Exporting Countries (OPEC) fell as net imports from OPEC countries accounted for only 42.7 percent of all U. S. net imports in 1985. OPEC imports decreased from 2 million barrels per day in 1984 to 1.8 million barrels per day in 1985. For the third year in a row, the largest share came from Venezuela. The remaining 57.3 percent of all U. S. net imports was from non-OPEC countries, with Mexico and Canada providing the greatest share. From 1982 through 1985, Mexico was the major source of U. S. net imports of petroleum, accounting for 19.2 percent of the total net imports in 1985.

Petroleum consumption in Pennsylvania rose less than 1.0 percent from 1983 to 223,057 thousand barrels in 1984. It accounted for 36.0 percent of total energy consumption for that year. Petroleum is the main source of energy for transportation, and this sector accounted for 60.0 percent of all petroleum consumption in 1984. Demand increased 1.4 percent from 1983 to 133,801 thousand barrels in 1984. Motor gasoline, which represents the largest share of transportation demand and of total petroleum demand, fell 1.2 percent to 102,159 thousand barrels in 1984.

Distillate fuel oil, the second largest contributor to total petroleum end-use, decreased 4.1 percent to 55,038 thousand barrels in 1984. This was due to a reduction in demand by the electric utility sector. While the residential sector accounts for the greatest portion of distillate fuel oil demand - 54.3 percent in 1960 and 38.6 percent in 1984 - transportation demand has more than doubled its share during that period, and now almost equals the residential share. Transportation sector use of distillate fuel oil has grown from 16.6 percent of the total demand in 1960 to 35.4 percent of the total in 1984.

Demand for residual fuel oil also diminished during 1984, falling 13.8 percent to 20,773 thousand barrels. While all end-use sectors contributed to the decline, electric utilities accounted for most of the drop. Since 1960, significant shifts have occurred in the use of residual fuel oil. Electric utility consumption increased at an average annual rate of 7.0 percent from 2,747 thousand barrels in 1960 to 13,967 thousand barrels in 1984. Industrial demand has decreased from 26,692 thousand barrels to 3,771 thousand barrels, a decline at a compound annual rate of 8.2 percent.

TABLE 16

U. S. PETROLEUM SUPPLY AND DISPOSITION
1960 - 1985
(Millions of Barrels per Day)

Year	Production			Other Domestic Supply[2]	Foreign Trade					Crude Oil Losses	Change in Stocks[6]	Petroleum Products Supplied
					Imports							
	Crude Oil[1]	Natural Gas Plant Liquids	Total Production		Crude Oil[1]	Petroleum Products[4]	Total Imports	Exports	Net Imports[5]			
1960	7.04	0.93	7.96	0.15	1.02	0.80	1.81	0.20	1.61	0.01	0.08	**9.80**
1961	7.18	0.99	8.17	0.18	1.05	0.87	1.92	0.17	1.74	0.01	(0.11)	**9.98**
1962	7.33	1.02	8.35	0.18	1.13	0.96	2.08	0.17	1.91	0.01	(0.03)	**10.40**
1963	7.54	1.10	8.64	0.20	1.13	0.99	2.12	0.21	1.91	0.01	NM	**10.74**
1964	7.61	1.15	8.77	0.22	1.20	1.06	2.26	0.20	2.06	0.01	(0.01)	**11.02**
1965	7.80	1.21	9.01	0.22	1.24	1.23	2.47	0.19	2.28	0.01	0.01	**11.51**
1966	8.30	1.28	9.58	0.25	1.22	1.35	2.57	0.20	2.37	0.01	(0.10)	**12.08**
1967	8.81	1.41	10.22	0.29	1.13	1.41	2.54	0.31	2.23	0.01	(0.17)	**12.56**
1968	9.10	1.50	10.60	0.35	1.29	1.55	2.84	0.23	2.61	0.01	(0.15)	**13.39**
1969	9.24	1.59	10.83	0.34	1.41	1.76	3.17	0.23	2.93	0.01	0.05	**14.14**
1970	9.64	1.66	11.30	0.35	1.32	2.10	3.42	0.26	3.16	0.01	(0.10)	**14.70**
1971	9.46	1.69	11.16	0.44	1.68	2.25	3.93	0.22	3.70	0.01	(0.07)	**15.21**
1972	9.44	1.74	11.18	0.44	2.22	2.53	4.74	0.22	4.52	0.01	0.23	**16.37**
1973	9.21	1.74	10.95	0.49	3.24	3.01	6.26	0.23	6.02	0.01	(0.14)	**17.31**
1974	8.77	1.69	10.46	0.49	3.48	2.64	6.11	0.22	5.89	0.01	(0.18)	**16.65**
1975	8.37	1.63	10.01	0.51	4.10	1.95	6.06	0.21	5.85	0.01	(0.03)	**16.32**
1976	8.13	1.60	9.74	0.59	5.29	2.03	7.31	0.22	7.09	0.01	0.06	**17.46**
1977	8.24	1.62	9.86	0.57	6.61	2.19	8.81	0.24	8.56	0.02	(0.55)	**18.43**
1978	8.71	1.57	10.27	0.49	6.36	2.01	8.36	0.36	8.00	0.02	0.09	**18.85**
1979	8.55	1.58	10.14	0.56	6.52	1.94	8.46	0.47	7.99	0.02	(0.15)	**18.51**
1980	8.60	1.57	10.17	0.68	5.26	1.65	6.91	0.54	6.36	0.01	(0.14)	**17.06**
1981	8.57	1.61	10.18	0.64	4.40	1.60	6.00	0.59	5.40	NM	(0.16)	**16.06**
1982	8.65	1.55	10.20	0.65	3.49	1.63	5.11	0.82	4.30	NM	0.15	**15.30**
1983	8.69	1.56	10.25	0.65	3.33	1.72	5.05	0.74	4.31	NM	0.02	**15.23**
1984	8.88	1.63	10.51	0.78	3.43	2.01	5.44	0.72	4.72	NM	(0.28)	**15.73**
1985[7]	8.92	1.62	10.54	0.79	3.22	1.83	5.05	0.78	4.26	NM	0.11	**15.70**

[1] *Includes lease condensate.*
[2] *Includes benzol, other hydrocarbons, hydrogen, alcohol, processing gains, and unaccounted for crude oil.*
[3] *Includes imports for Strategic Petroleum Reserve, which began in 1977.*
[4] *For 1981 and forward, includes motor gasoline blending components, and aviation gasoline blending components.*
[5] *Net Trade = imports minus exports.*
[6] *Negative numbers denote a net addition to stocks or a reduction in supply. Positive numbers denote a net withdrawal from stocks or an addition to supply.*
[7] *Preliminary.*

Note: Sum of components may not equal total due to independent rounding.
Note: Parentheses denote negative numbers.

NM Not meaningful. Less than 5,000 barrels per day.

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1985*, May 1986.

FIGURE 13

U. S. PETROLEUM SUPPLY AND DISPOSITION
FOR SELECTED YEARS

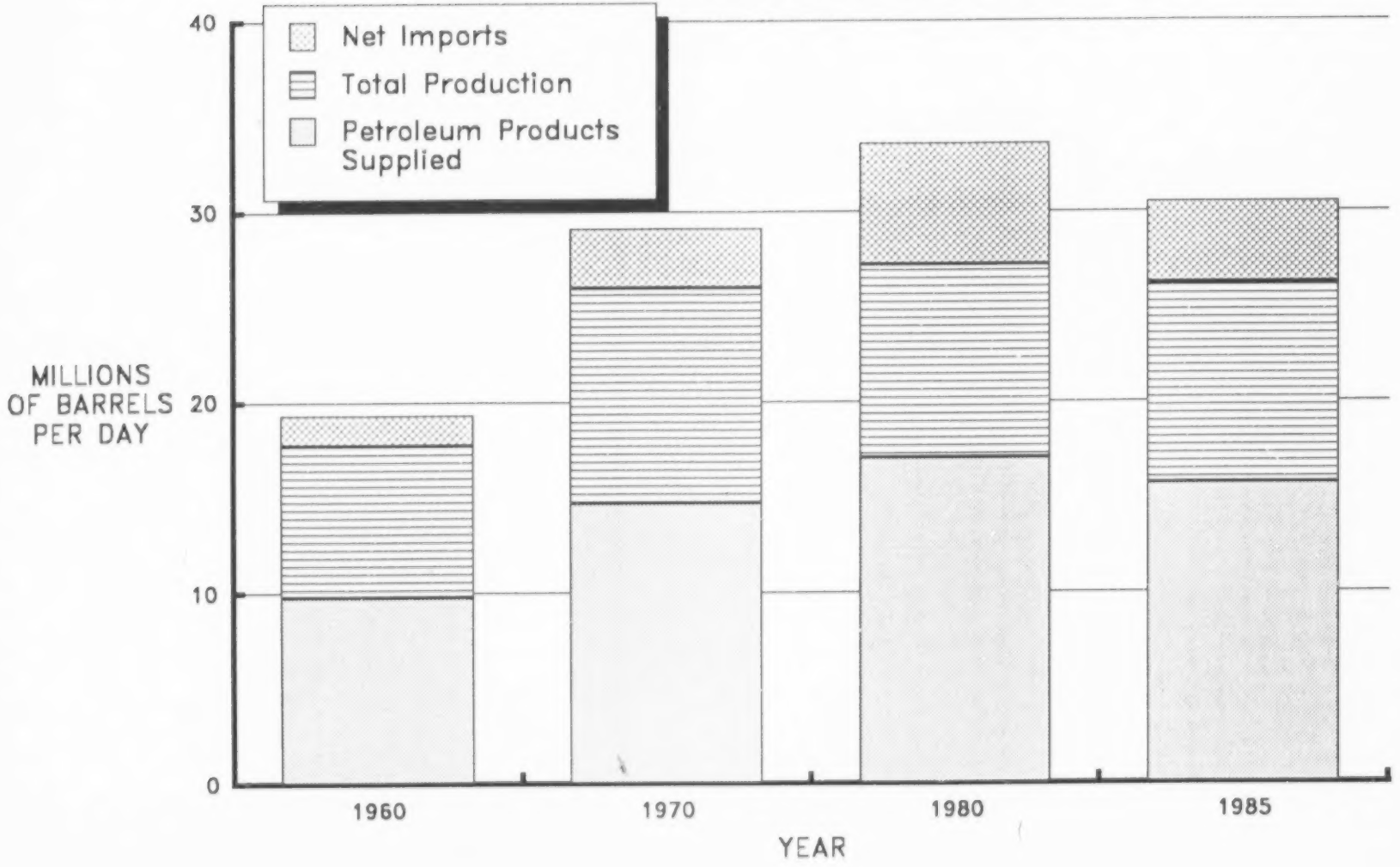


TABLE 17

IMPORTS OF CRUDE OIL AND PETROLEUM PRODUCTS BY COUNTRY OF ORIGIN
1960 - 1985
(Thousands of Barrels per Day)

	Organization of Petroleum Exporting Countries (OPEC)[1]													
Year	Algeria	Indonesia	Nigeria	Saudi Arabia	Venezuela	Other OPEC[2]	Total OPEC[3]	Arab Members of OPEC[4]	Canada	Mexico	United Kingdom	Virgin Is. and Puerto Rico	Other Non-OPEC	Total
1960	1	77	0	84	911	241	1,314	292	120	16	NM	36	328	1,814
1961	0	62	0	73	879	272	1,286	284	190	40	1	44	357	1,918
1962	0	69	0	74	906	216	1,265	241	250	49	2	41	475	2,082
1963	1	63	0	108	900	211	1,283	258	265	48	3	44	480	2,123
1964	6	68	0	131	933	223	1,361	293	299	47	NM	47	505	2,259
1965	9	63	15	158	994	237	1,476	324	323	48	NM	47	574	2,468
1966	4	53	11	147	1,018	238	1,471	300	384	45	6	61	606	2,573
1967	5	66	5	92	938	153	1,259	177	450	49	11	96	673	2,538
1968	6	73	9	74	886	255	1,303	272	506	45	28	145	814	2,841
1969	2	88	49	65	875	256	1,335	276	608	43	20	189	971	3,166
1970	8	70	50	30	989	197	1,344	196	766	42	11	271	985	3,419
1971	15	111	102	128	1,020	296	1,672	327	857	27	10	368	991	3,925
1972	92	164	251	190	959	406	2,062	530	1,108	21	9	432	1,108	4,740
1973	136	213	459	486	1,135	564	2,993	915	1,325	16	15	429	1,479	6,257
1974	190	300	713	461	979	635	3,278	752	1,070	8	8	481	1,265	6,110
1975	282	390	762	715	702	750	3,601	1,383	846	71	14	496	1,026	6,054
1976	432	539	1,025	1,230	700	1,140	5,066	2,424	599	87	31	510	1,019	7,312
1977	559	541	1,143	1,380	690	1,880	6,193	3,185	517	179	126	571	1,221	8,807
1978	649	573	919	1,144	645	1,821	5,751	2,963	467	318	180	522	1,126	8,364
1979	636	420	1,080	1,356	690	1,456	5,638	3,056	538	439	202	523	1,116	8,456
1980	488	348	857	1,261	481	865	4,300	2,551	455	533	176	476	969	6,909
1981	311	366	620	1,129	406	491	3,323	1,848	447	522	375	389	939	5,995
1982	170	248	514	552	412	250	2,146	854	482	685	456	366	979	5,114
1983	240	338	302	337	422	223	1,862	632	547	826	382	322	1,111	5,050
1984	323	343	216	325	548	294	2,049	819	630	748	402	336	1,273	5,438
1985[5]	190	306	287	167	608	266	1,824	475	768	815	314	275	1,049	5,045

[1] *See Glossary for membership.*
[2] *Includes Ecuador, Gabon, Iran, Iraq, Kuwait, Libya, Qatar, and United Arab Emirates.*
[3] *Excludes petroleum imported into the United States indirectly from OPEC countries, primarily from Caribbean and West European refining areas, as petroleum products which were refined from crude oil produced in OPEC countries.*
[4] *Includes Algeria, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and United Arab Emirates.*
[5] *Preliminary.*

Note: Data include imports for the Strategic Petroleum Reserve, which began in 1977.
Note: Sum of components may not equal total due to independent rounding.

NM Not meaningful. Less than 500 barrels per day.

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1985*, May 1986.

FIGURE 14

U. S. IMPORTS OF CRUDE OIL AND PETROLEUM PRODUCTS BY COUNTRY OF ORIGIN, 1960 – 1985

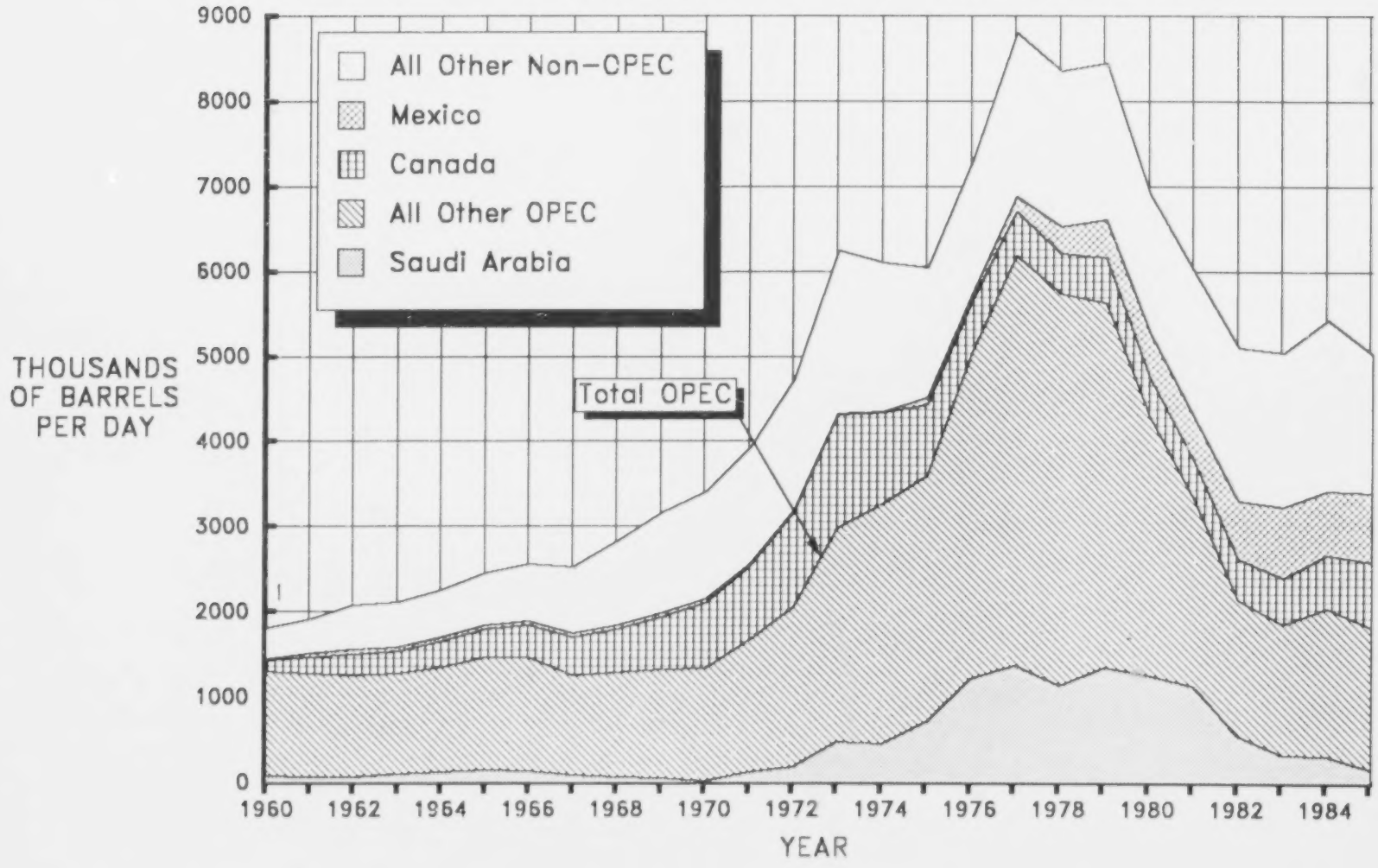


TABLE 18

PENNSYLVANIA PETROLEUM CONSUMPTION BY PRODUCT TYPE
1960 - 1984
(Thousands of Barrels)

Year	Distillate Fuel	Motor Gasoline	Residual Fuel	Aviation Fuels[1]	Kerosene	LPG[2]	Other[3]	Total
1960	46,257	80,104	42,958	2,932	3,508	2,334	19,695	197,788
1961	46,649	78,939	38,991	3,749	3,616	2,545	19,038	193,527
1962	49,912	81,358	40,943	3,552	3,692	2,700	20,259	202,416
1963	52,060	82,372	41,917	4,192	3,644	2,976	20,273	207,434
1964	51,264	83,228	42,965	4,120	3,646	3,241	23,284	211,748
1965	54,459	85,723	43,238	5,173	3,851	3,030	24,713	220,187
1966	54,414	88,179	47,678	5,193	3,858	3,411	24,390	227,123
1967	57,240	91,866	44,436	6,579	4,573	3,301	24,212	232,207
1968	59,924	97,503	45,890	7,892	4,404	3,854	24,648	244,115
1969	61,519	98,653	52,345	9,275	4,372	4,376	25,393	255,933
1970	63,489	101,720	60,436	9,646	4,251	4,754	25,642	269,938
1971	63,171	107,344	60,724	9,072	4,711	4,895	24,962	274,879
1972	69,280	116,142	60,152	9,170	5,486	5,577	26,413	292,220
1973	72,139	114,856	59,253	9,712	3,975	5,808	27,619	293,362
1974	72,016	108,823	56,643	9,411	3,642	5,687	26,559	282,781
1975	68,017	108,766	41,631	8,903	3,398	6,077	23,879	260,671
1976	75,108	117,709	50,302	8,861	3,567	6,399	28,106	290,052
1977	78,031	120,263	59,962	8,934	2,551	6,857	29,440	306,038
1978	75,378	121,978	58,363	9,340	2,517	7,345	31,922	306,843
1979	76,720	116,157	46,461	10,232	2,937	8,511	32,339	293,357
1980	68,602	107,925	35,099	10,485	2,763	7,255	29,687	261,816
1981	59,885	104,151	29,878	8,508	2,651	7,635	22,988	235,696
1982	52,945	102,134	20,869	8,452	2,932	7,170	21,695	216,197
1983	52,873	103,391	24,104	8,796	1,836	7,210	24,497	222,707
1984	55,038	102,159	20,773	9,948	1,212	8,217	25,710	223,057

[1] *Includes aviation gasoline and jet fuel.*
[2] *Liquefied petroleum gases (LPG) series estimates since 1979 may be affected by the changing data sources and estimation procedures.*
[3] *Other includes asphalt, road oil and lubricants; and wood, waste, wind, photovoltaic, and solar thermal energy sources consumed at electric utilities to produce electricity.*

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 15

PENNSYLVANIA PETROLEUM CONSUMPTION BY PRODUCT TYPE FOR SELECTED YEARS

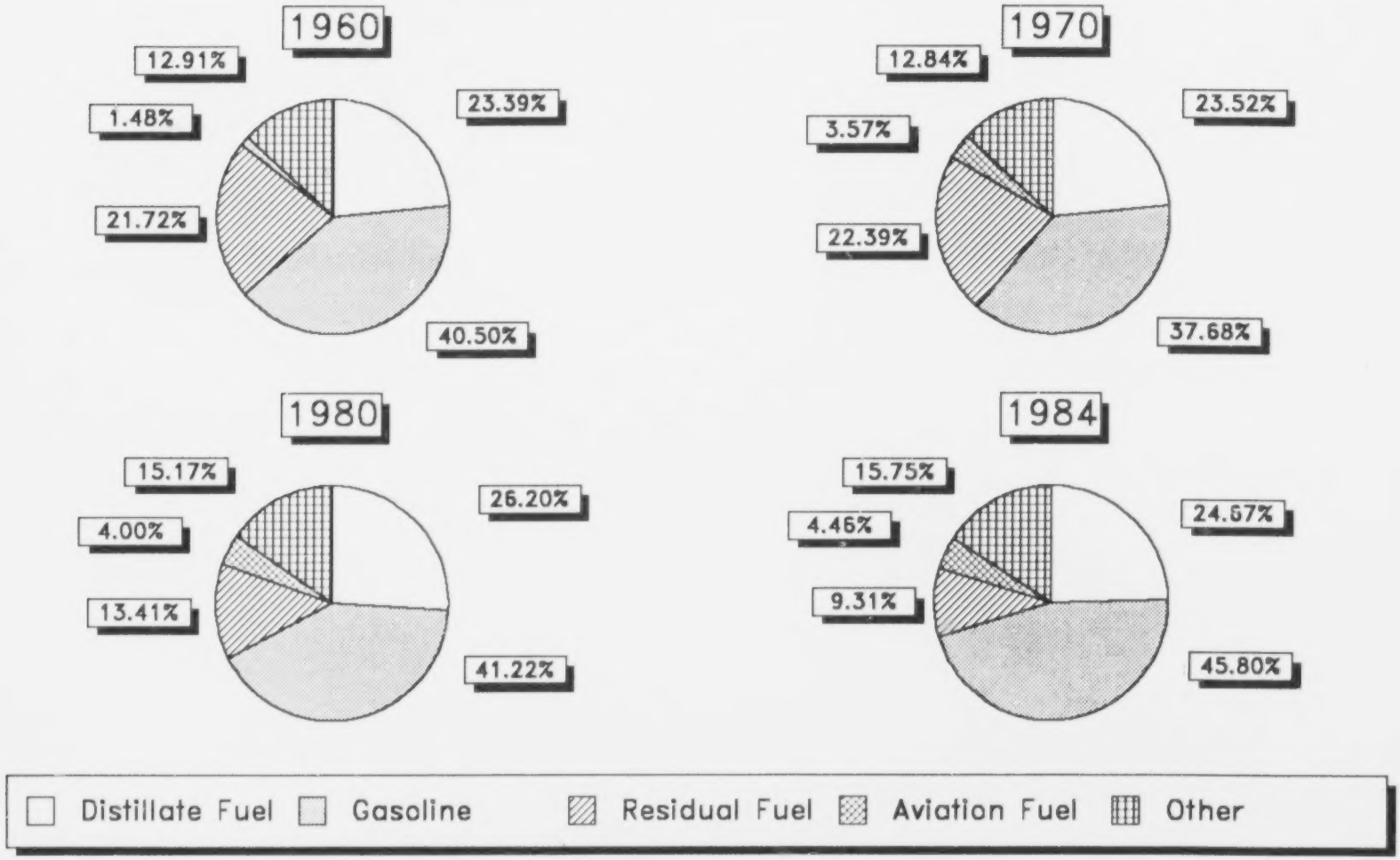


TABLE 19

PENNSYLVANIA PETROLEUM CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Thousands of Barrels)

Year	Residential	Commercial	Industrial	Transportation	Electric Utilities	Total
1960	28,989	12,401	59,642	93,525	3,232	197,789
1961	28,588	11,903	57,355	92,426	3,255	193,527
1962	32,045	12,652	59,869	94,853	2,998	202,417
1963	32,361	12,966	60,225	98,513	3,370	207,435
1964	31,261	13,180	63,853	100,256	3,198	211,748
1965	32,493	13,897	68,403	101,451	3,943	220,187
1966	31,969	14,184	69,106	105,142	6,721	227,122
1967	34,359	13,057	65,180	111,190	8,420	232,206
1968	35,526	13,178	64,397	120,385	10,630	244,116
1969	35,471	13,201	64,285	122,235	20,741	255,933
1970	36,500	13,767	65,863	127,348	26,460	269,938
1971	36,897	13,452	65,658	132,583	26,289	274,879
1972	40,222	14,097	68,198	142,648	27,053	292,218
1973	39,567	13,866	72,779	145,878	21,272	293,362
1974	36,403	12,259	70,430	140,438	23,252	282,782
1975	35,719	10,980	61,509	138,771	13,691	260,670
1976	39,191	11,713	70,691	150,857	17,600	290,052
1977	39,338	12,310	75,189	154,050	25,151	306,038
1978	36,879	11,826	71,177	155,720	31,240	306,842
1979	35,809	10,192	72,834	152,142	22,380	293,357
1980	31,789	8,165	56,769	145,310	19,780	261,813
1981	28,022	7,925	46,273	136,074	17,405	235,699
1982	24,674	6,867	43,707	129,099	11,850	216,197
1983	24,076	8,647	37,891	131,911	20,182	222,707
1984	24,472	8,395	39,444	133,801	16,944	223,056

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 16

PENNSYLVANIA PETROLEUM CONSUMPTION BY END-USE SECTOR, 1960 - 1984

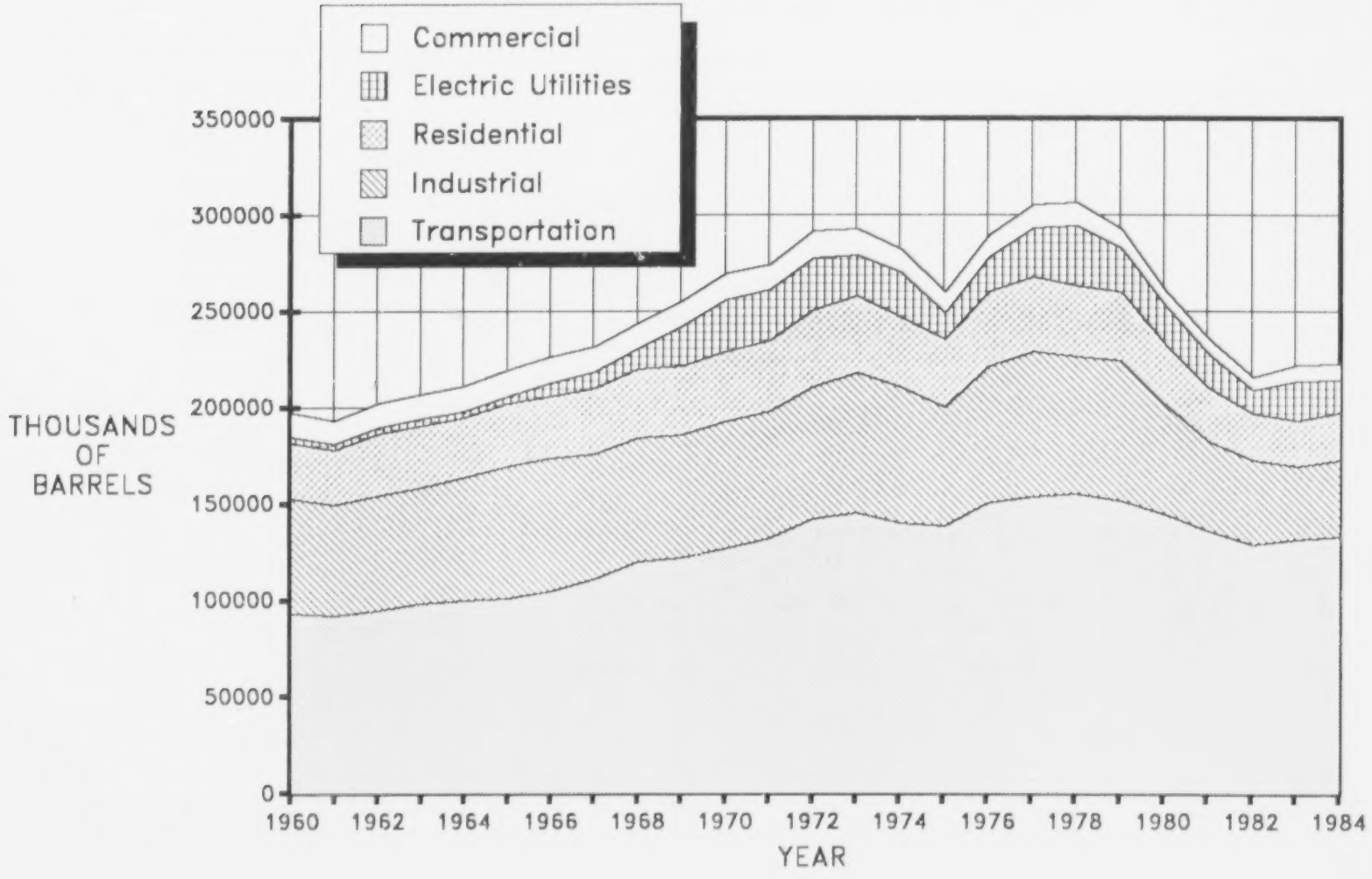


TABLE 20

PENNSYLVANIA DISTILLATE FUEL OIL CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Thousands of Barrels)

Year	Residential	Commercial	Industrial	Transportation	Electric Utilities	Total
1960	25,101	4,363	8,645	7,662	485	46,256
1961	24,667	4,288	9,047	8,159	488	46,649
1962	27,888	4,848	9,649	7,078	450	49,913
1963	28,135	4,891	10,184	8,345	505	52,060
1964	27,038	4,700	10,067	8,979	480	51,264
1965	28,391	4,935	11,641	8,900	591	54,458
1966	27,512	4,783	11,582	9,329	1,008	54,414
1967	29,375	5,106	11,888	9,608	1,263	57,240
1968	30,728	5,342	10,650	11,610	1,594	59,924
1969	30,255	5,259	10,822	12,071	3,111	61,518
1970	31,242	5,431	10,196	12,662	3,959	63,490
1971	31,383	5,455	9,894	12,164	4,276	63,172
1972	33,912	5,895	10,256	14,488	4,949	69,500
1973	34,319	5,966	11,572	16,854	3,586	72,297
1974	31,931	5,551	11,362	17,478	5,824	72,146
1975	31,587	5,491	11,033	16,566	3,419	68,096
1976	34,802	6,050	12,581	18,742	2,933	75,108
1977	35,199	6,119	13,872	19,258	3,584	78,032
1978	33,102	5,754	12,583	20,260	3,692	75,391
1979	32,391	5,631	15,239	21,501	1,958	76,720
1980	27,838	5,858	11,128	21,539	2,238	68,601
1981	24,202	5,160	10,081	18,709	1,735	59,887
1982	20,702	4,721	8,920	17,161	1,442	52,946
1983	20,703	5,708	6,239	18,042	2,182	52,874
1984	21,232	5,854	6,399	19,480	2,073	55,038

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 17

PENNSYLVANIA DISTILLATE FUEL OIL CONSUMPTION
BY END-USE SECTOR FOR SELECTED YEARS

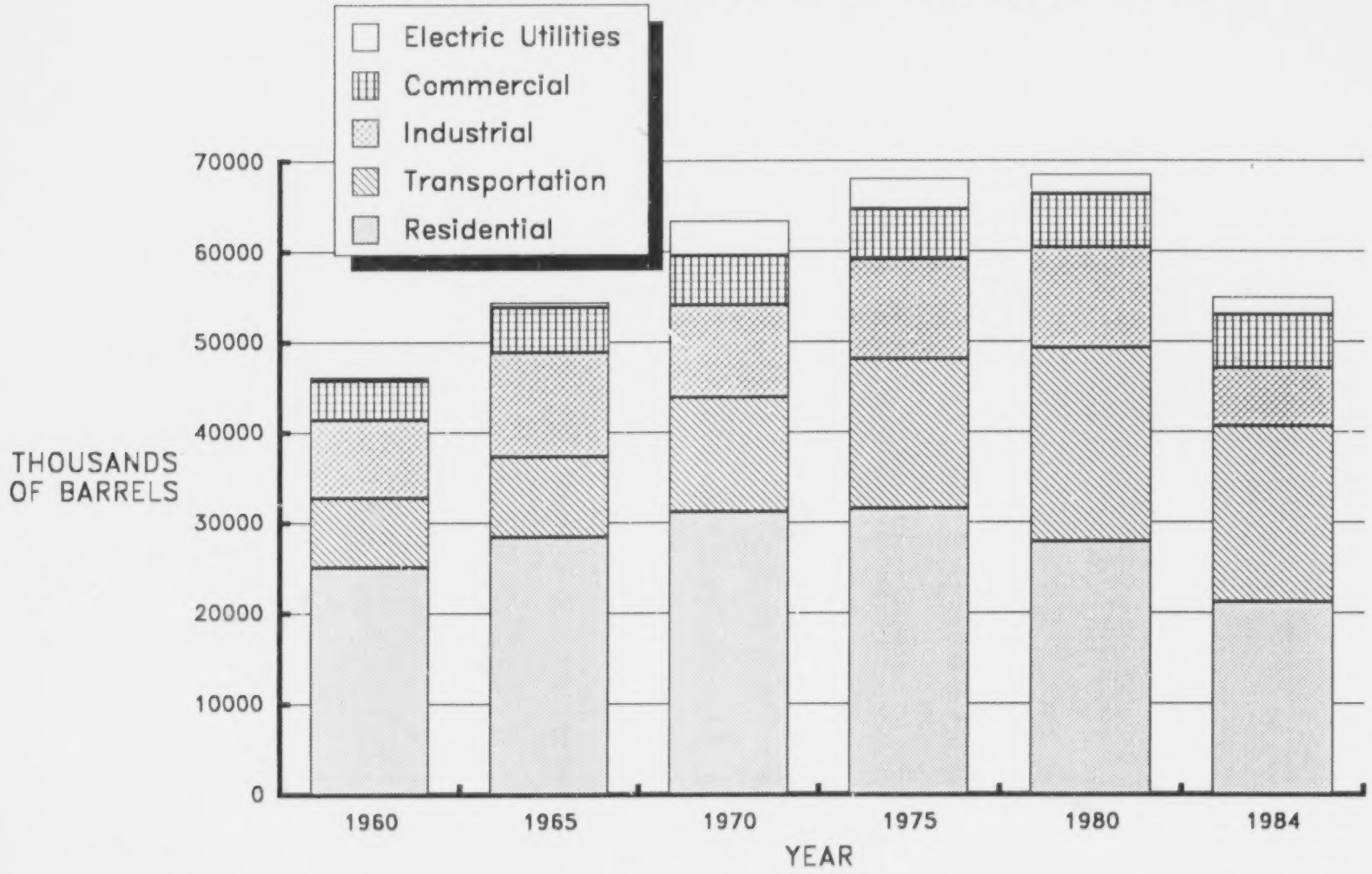


TABLE 21

PENNSYLVANIA RESIDUAL FUEL OIL CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Thousands of Barrels)

Year	Commercial	Industrial	Transportation	Electric Utilities	Total
1960	5,514	29,692	5,005	2,747	42,958
1961	4,980	27,189	4,055	2,767	38,991
1962	5,118	27,700	5,577	2,549	40,944
1963	5,256	27,507	6,290	2,864	41,917
1964	5,481	28,048	6,718	2,719	42,966
1965	5,899	29,434	4,554	3,351	43,238
1966	6,167	30,670	5,129	5,713	47,679
1967	4,913	26,651	5,716	7,157	44,437
1968	4,875	26,191	5,789	9,035	45,890
1969	4,879	25,218	4,618	17,630	52,345
1970	5,254	27,132	5,548	22,502	60,436
1971	5,239	27,448	6,024	22,013	60,724
1972	5,057	27,881	5,109	22,105	60,152
1973	5,388	29,864	6,315	17,686	59,253
1974	4,828	28,339	6,048	17,428	56,643
1975	3,630	21,941	5,788	10,273	41,632
1976	4,122	25,286	6,227	14,668	50,303
1977	4,420	27,630	6,346	21,567	59,963
1978	3,989	23,133	5,007	26,234	58,363
1979	3,165	18,744	4,755	19,797	46,461
1980	1,521	11,555	4,796	17,226	35,098
1981	1,590	7,777	5,177	15,334	29,878
1982	1,106	8,190	1,624	9,949	20,869
1983	1,529	3,888	1,637	17,049	24,103
1984	1,483	3,771	1,552	13,967	20,773

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 18

PENNSYLVANIA RESIDUAL FUEL OIL CONSUMPTION
BY END-USE SECTOR FOR SELECTED YEARS

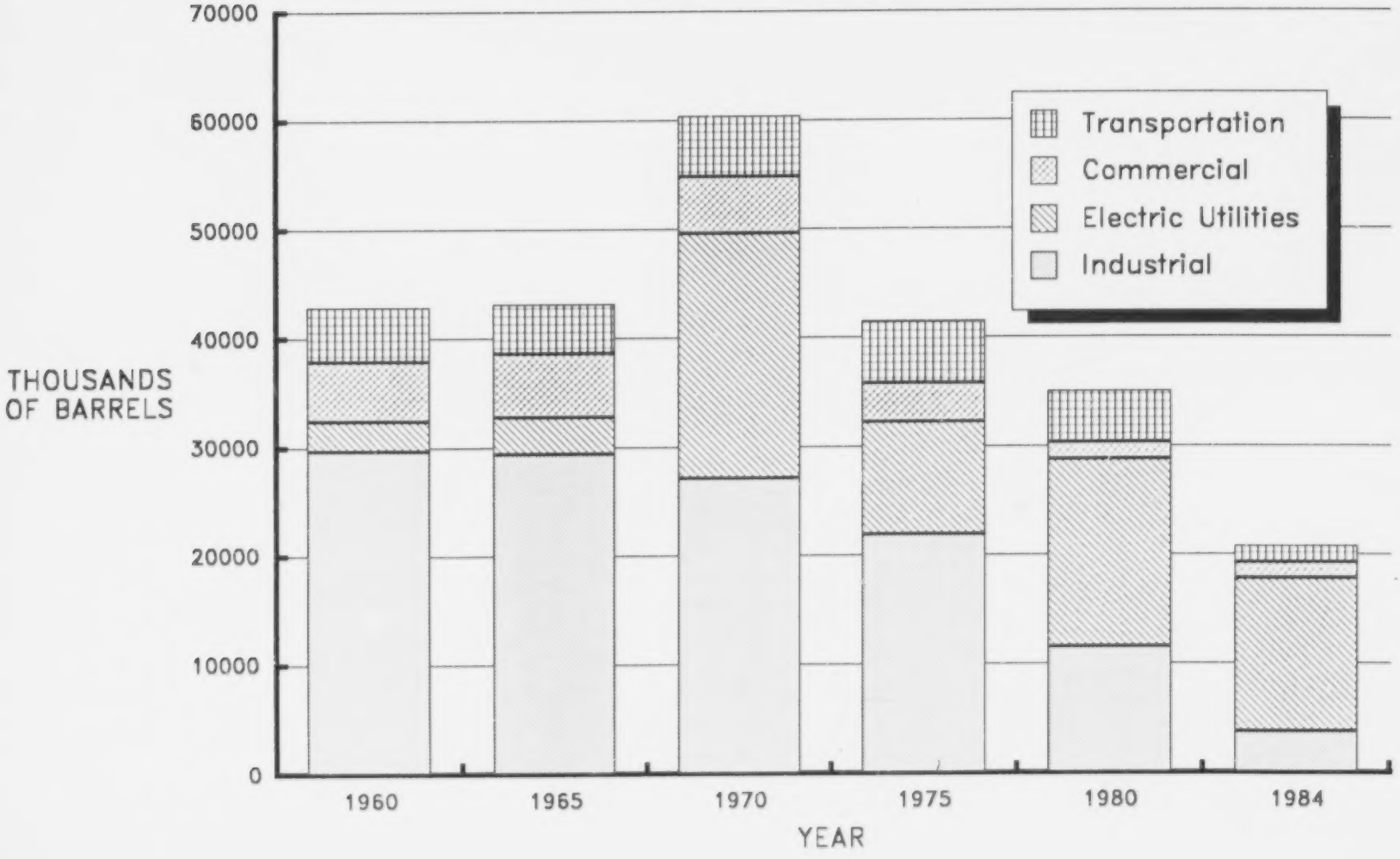


TABLE 22

PENNSYLVANIA MOTOR GASOLINE CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Thousands of Barrels)

Year	Commercial	Industrial	Transportation	Total
1960	2,084	1,455	76,565	80,104
1961	2,190	1,613	75,136	78,939
1962	2,211	1,643	77,504	81,358
1963	2,329	1,507	78,536	82,372
1964	2,494	1,510	79,225	83,229
1965	2,585	1,480	81,658	85,723
1966	2,707	1,392	84,080	88,179
1967	2,474	1,318	88,074	91,866
1968	2,413	1,322	93,768	97,503
1969	2,449	1,289	94,914	98,652
1970	2,455	1,181	98,084	101,720
1971	2,110	1,327	103,908	107,345
1972	2,414	1,153	112,575	116,142
1973	1,874	1,142	111,839	114,855
1974	1,316	1,167	106,340	108,823
1975	1,310	1,098	106,358	108,766
1976	961	1,093	115,655	117,709
1977	1,205	1,022	118,036	120,263
1978	1,564	830	119,584	121,978
1979	975	1,108	114,074	116,157
1980	313	586	107,026	107,925
1981	669	1,218	102,264	104,151
1982	490	1,122	100,522	102,134
1983	672	737	101,983	103,392
1984	393	558	101,209	102,160

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

4. NATURAL GAS

This section lists consumption of natural gas by end-use sector from 1960 to 1984. It also highlights selected information for the natural gas industry in Pennsylvania in 1985.

Consumption of natural gas totaled 677 billion cubic feet in 1984. The residential sector was the leading energy consuming sector, using 265 billion cubic feet, followed by the industrial sector with 248 billion cubic feet. Total gas consumption peaked in 1972 at 829 billion cubic feet and has decreased at a compound annual rate of 1.7 percent since.

In 1985, natural gas production in Pennsylvania was 150,541 million cubic feet, 9.5 percent less than in 1984. Proven recoverable reserves increased 3.9 percent to 1,979,369 million cubic feet. Stored recoverable gas decreased 13.5 percent to 537,090 million cubic feet. Pennsylvania's natural gas industry reported 1,894 gas well completions in 1985, including 15 old wells drilled deeper, a 37.3 percent increase over the 1984 figure of 1,379. The average number of gas utility customers remained stable at around 2,384 thousand. Gas utility industry sales declined 10.9 percent in 1985 to 526 trillion Btu. Withdrawals from storage have increased 25.4 percent between 1984 and 1985 to 366,152 million cubic feet.

TABLE 23

PENNSYLVANIA NATURAL GAS CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Billions of Cubic Feet)

Year	Residential	Commercial	Industrial	Transportation	Electric Utilities	Total
1960	232	56	213	15	6	522
1961	237	59	218	13	3	530
1962	245	62	226	15	2	550
1963	250	64	251	17	4	586
1964	252	65	270	18	5	610
1965	256	68	285	19	1	629
1966	275	74	307	21	1	678
1967	280	83	290	24	2	679
1968	286	88	316	24	4	718
1969	295	96	343	25	7	766
1970	297	99	340	27	9	772
1971	304	110	350	28	10	802
1972	305	123	368	28	5	829
1973	293	116	350	22	3	784
1974	272	102	312	21	8	715
1975	273	99	263	18	1	654
1976	290	125	277	22	NM	714
1977	277	112	256	23	NM	668
1978	286	111	252	24	NM	673
1979	289	111	313	26	2	741
1980	288	118	337	29	3	775
1981	286	129	333	34	3	785
1982	272	126	264	31	2	695
1983	252	115	246	29	2	644
1984	265	126	248	34	3	676

Note: Natural gas includes supplemental gaseous fuels.

NM Not meaningful. Btu value less than 0.05 and physical unit value less than 0.5.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 19

PENNSYLVANIA NATURAL GAS CONSUMPTION BY END-USE SECTOR FOR SELECTED YEARS

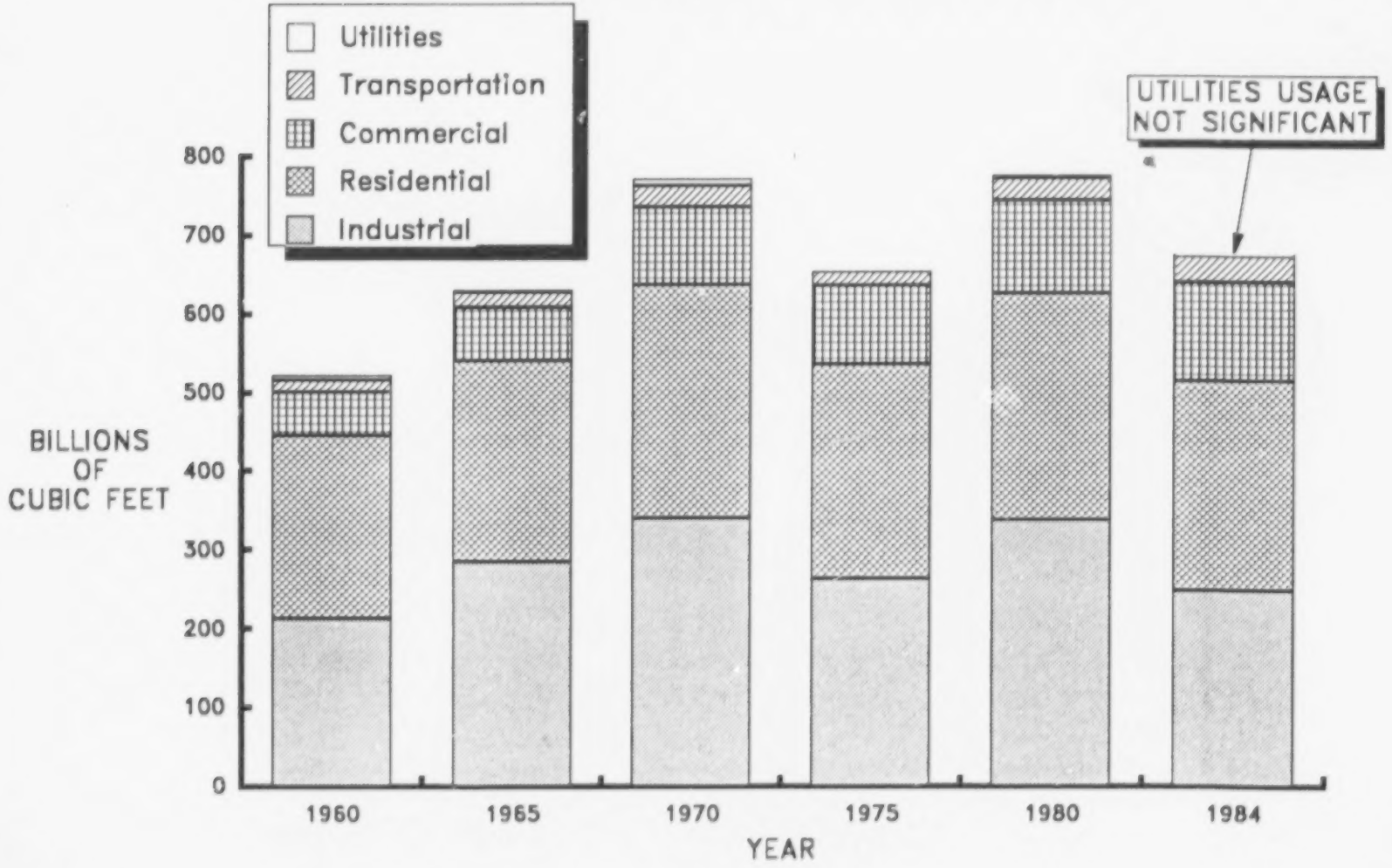
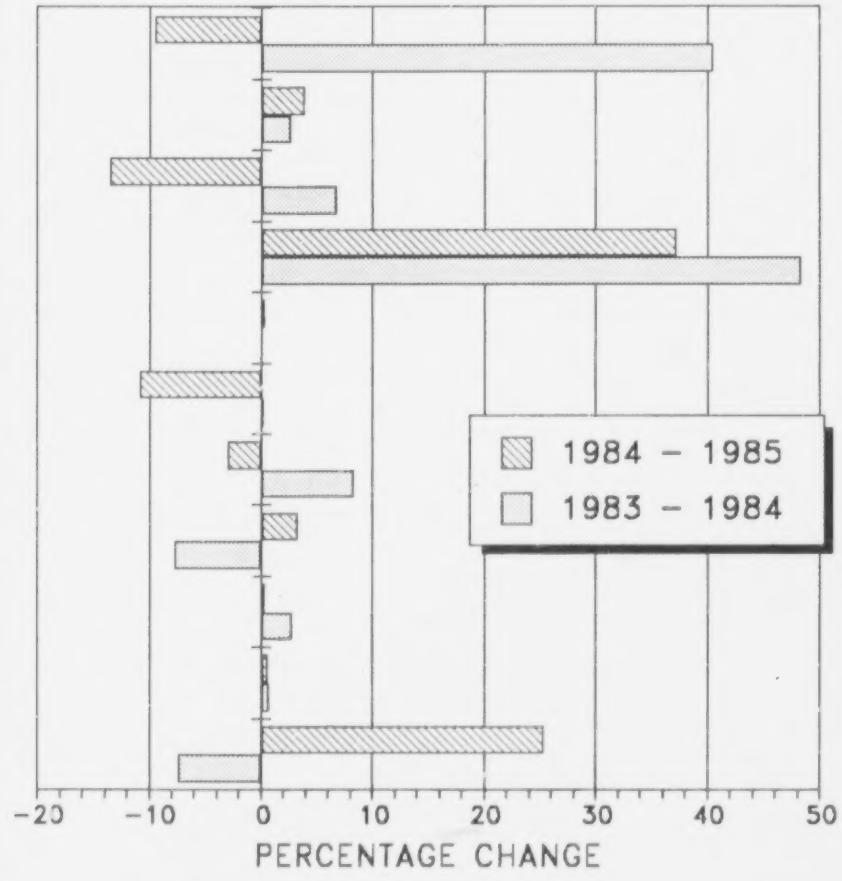


FIGURE 20

PENNSYLVANIA NATURAL GAS INDUSTRY: SELECTED HIGHLIGHTS FOR 1985

	1985
Production	150,541 MMcf
Proven Recoverable Gas Reserves	1,979,369 MMcf
Stored Recoverable Reserves	537,090 MMcf
New Producing Gas Wells	1,894
Customers	2,384,000
Utility Sales	526 TBTUs
Wellhead Price	$3.15/MMBTUs
Resale Price	$4.04/MMBTUs
End-Use Price	$5.94/MMBTUs
Miles Of Pipeline And Main	54,750
Withdrawals From Storage	366,152 MMcf



5. OIL AND GAS RESOURCE DEVELOPMENT

The information in this section illustrates the amount of production, the annual average unit price, and the annual total values for oil and gas produced in Pennsylvania since 1960. A summary of exploratory, development, and service drilling in Pennsylvania in 1985 is also presented.

Pennsylvania's crude oil production totaled 4,851 thousand barrels in 1985, a slight increase over the 1984 production total of 4,825 thousand barrels. The three leading counties for oil production during the year were Warren, Venango and McKean.

These counties accounted for 67.8 percent of the total oil produced in Pennsylvania. Crude oil production in the state has been steadily increasing over the past six years, from a low of 2,817 thousand barrels in 1979. However, production is still 18.4 percent below the 1960 level of 5,942 thousand barrels. In 1985, the average price for crude oil was $25.12 per barrel, down from a high of $37.42 per barrel in 1980. This is the fifth consecutive year in which price declines were recorded.

Pennsylvania's natural gas production decreased in 1985 by 9.5 percent from 166,342 million cubic feet in 1984 to 150,541 million cubic feet. Production remains 25.8 percent higher than the amount produced in 1960. The average price for gas in 1985 was approximately $3.15 per thousand cubic feet, down 10 cents from 1984.

Exploratory drilling in Pennsylvania rose from 86 wells reported in 1984 to 110 wells reported in 1985, an increase of 27.9 percent. The success rate for all exploratory wells was 76 percent. For the previous year, 90.0 percent of all exploratory wells were successfully completed. The term "success" means that the well was completed for production without specific reference to long-term economic viability.

Development drilling in the state increased by 80.2 percent from 2,466 wells in 1984 to 4,443 wells in 1985. The success rate for all development drilling remained at the 98 percent level first achieved in 1982.

All oil and gas wells that cannot specifically be considered oil- and gas- producing wells or dry holes are referred to as service wells. In 1985, 104 service wells were reported in Pennsylvania. This is a 126.1 percent increase from the 1984 total of 46 wells.

TABLE 24

PRODUCTION, UNIT PRICE, AND TOTAL VALUE OF CRUDE OIL AND NATURAL GAS PRODUCED IN PENNSYLVANIA 1960 - 1985

Year	Crude Oil			Natural Gas			Total Oil and Gas Value
	Production	Average Yearly Price	Total Value	Production	Average yearly Price[1]	Total Value	
	(Barrels)	(Dollars/bbl)	(Dollars)	(Mcf)	(Dollars/Mcf)	(Dollars)	(Dollars)
1960	5,942,000	4.57	27,154,940	119,671,000	0.26	31,114,460	58,269,400
1961	5,580,000	4.76	26,560,800	98,318,000	0.26	25,562,680	52,123,480
1962	5,238,000	4.63	24,251,940	87,308,000	0.26	22,700,080	46,952,020
1963	5,014,000	4.63	23,214,820	92,340,000	0.26	24,008,400	47,223,220
1964	5,113,000	4.48	22,906,240	85,322,000	0.26	22,183,720	45,089,960
1965	4,859,000	4.20	20,407,800	82,668,000	0.26	21,493,680	41,901,480
1966	4,349,000	4.33	18,831,170	91,365,000	0.26	23,754,900	42,586,070
1967	4,409,000	4.35	19,179,150	89,966,000	0.26	23,391,160	42,570,310
1968	4,160,000	4.35	18,096,000	87,987,000	0.28	24,636,360	42,732,360
1969	4,448,000	4.29	19,081,920	79,134,000	0.26	20,574,840	39,656,760
1970	4,015,000	4.27	17,144,050	77,535,000	0.27	20,934,450	38,078,500
1971	3,798,000	4.47	16,977,060	76,451,000	0.30	22,935,300	39,912,360
1972	3,441,000	4.60	15,828,600	73,958,000	0.45	33,281,100	49,109,700
1973	3,282,000	5.73	18,805,860	78,514,000	0.45	35,331,300	54,137,160
1974	3,399,000	8.43	28,653,570	82,735,000	0.50	41,367,500	70,021,070
1975	3,199,000	9.26	29,622,740	84,772,000	0.80	67,817,600	97,440,340
1976	2,950,000	11.51	33,954,500	89,974,000	0.85	76,477,900	110,432,400
1977	2,659,000	14.22	37,810,980	92,293,000	1.00	92,293,000	130,103,980
1978	2,820,000	14.77	41,651,400	97,763,000	1.25	122,203,750	163,855,150
1979	2,817,000	23.67	66,678,390	96,313,000	1.40	134,838,200	201,516,590
1980	2,940,000	37.42	110,014,800	97,439,000	1.50	146,158,500	256,173,300
1981	3,729,000	36.33	135,474,570	122,454,000	2.00	244,908,000	380,382,570
1982	4,282,000	31.42	134,540,440	121,111,000	2.80	339,110,800	473,651,240
1983	4,491,000	28.18	126,556,380	118,372,000	3.00	355,116,000	481,672,380
1984	4,825,000	27.64	133,363,000	166,342,000	3.25	540,611,500	673,974,500
1985	4,851,000	25.12	121,857,712	150,541,000	3.15	474,204,150	596,061,862

[1] *Gas prices estimated only.*

Sources: Penn Grade Crude Association, American Gas Association, Pennsylvania Department of Environmental Resources, Bureau of Topographic and Geologic Survey, *Oil and Gas Developments in Pennsylvania in 1985.*

FIGURE 21

PENNSYLVANIA CRUDE OIL PRODUCTION, 1960 – 1985

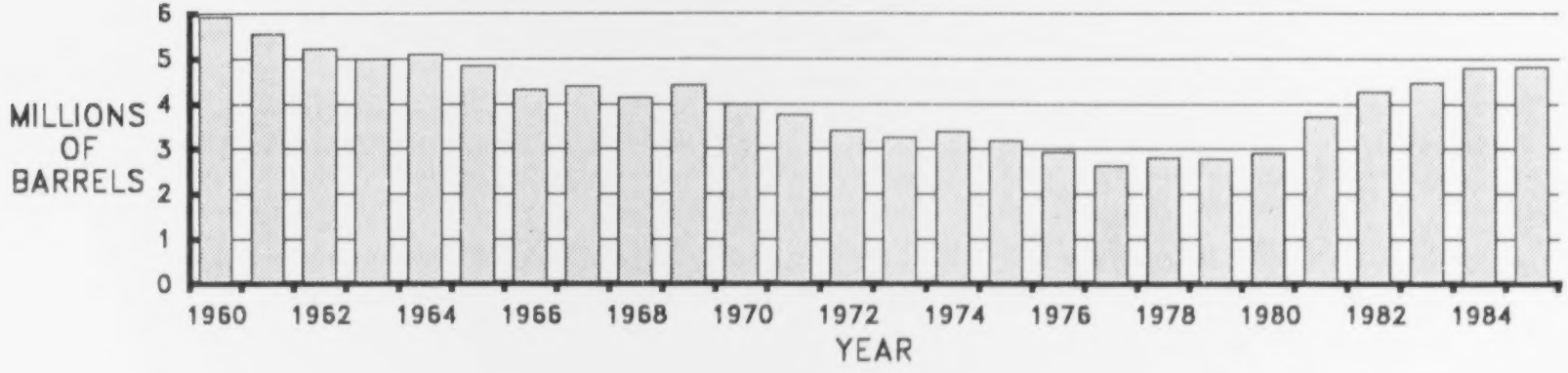


FIGURE 22

PENNSYLVANIA NATURAL GAS PRODUCTION, 1960 – 1985

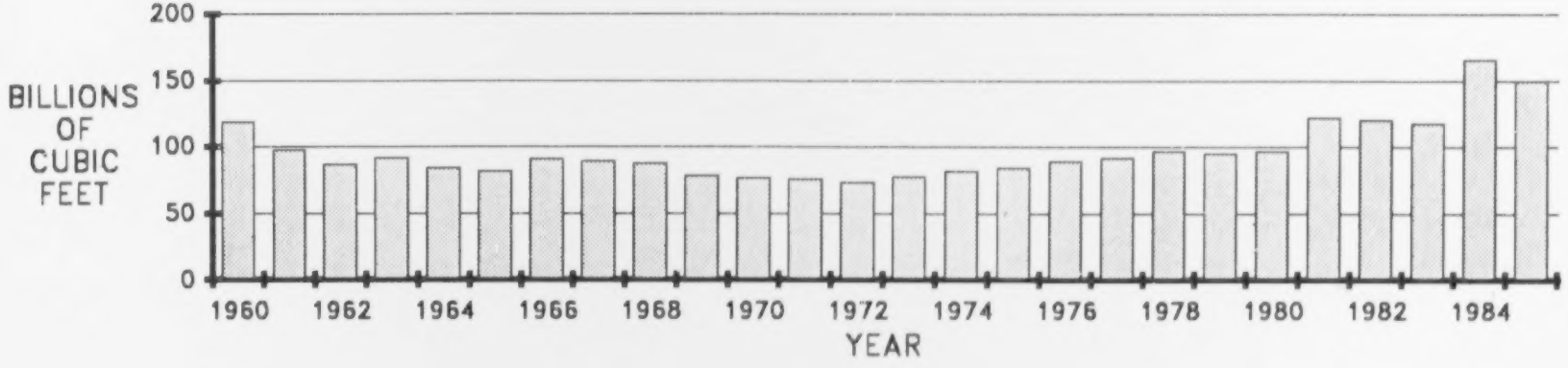


TABLE 25

PENNSYLVANIA'S EXPLORATORY AND PRIMARY DEVELOPMENT WELLS AND DRILLING FOOTAGES REPORTED 1984 AND 1985

	1984 Wells	1984 Footage	1985 Wells	1985 Footage
Exploratory Wells				
Gas	74	343,668	74	359,755
Oil	2	2,594	9	11,766
Oil & Gas	1	1,180	1	4,270
Dry	9	59,048	26	152,685
Total (% successful)	86 (90%)	406,490	110 (76%)	528,476
Development Wells				
Gas	1,305	4,336,391	1,820	6,820,884
Oil	1,071	1,233,282	2,462	2,735,730
Oil & Gas	39	86,215	76	196,222
Dry	51	90,953	85	166,203
Total (% successful)	2,466 (98%)	5,746,841	4,443 (98%)	9,919,039
Total Exploratory and Development Wells				
Gas	1,379	4,680,059	1,894	7,180,639
Oil	1,073	1,235,876	2,471	2,747,496
Oil & Gas	40	87,395	77	200,492
Dry	60	150,001	111	318,888
Total	2,552	6,153,331	4,553	10,447,515
Service Wells	46	84,924	104	200,327
Total All Wells Drilled	2,598 (98%)	6,238,255	4,657 (98%)	10,647,842

Source: Pennsylvania Department of Environmental Resources, Bureau of Topographic and Geologic Survey, *Oil and Gas Developments in Pennsylvania in 1985.*

6. COAL

This section contains detailed statistics for the Pennsylvania anthracite and bituminous coal industry from 1960 to 1986. In a number of cases, such as coal distribution and imports and exports, a shorter series covering the period 1980 to 1986 is available.

For 1986, the Pennsylvania Department of Environmental Resources (DER) preliminarily reported anthracite coal production at 3,833 thousand tons. Surface mines produced 3,240 thousand tons, 84.5 percent of the total, while underground mines accounted for 593 thousand tons, 15.5 percent of the total. Anthracite production has fluctuated in recent years. Production in 1986 was 26.7 percent below the 1985 level of 5,229 thousand tons. Both production and the number of industry employees are down approximately 50.0 percent from the level reported in 1969. Employment, which was reported at 20,269 in 1960, dropped to 3,225 in 1985.

Although the use of anthracite coal in Pennsylvania increased 7.9 percent over 1983 to 2,264 thousand tons in 1984, consumption has decreased annually since 1960 at a compound rate of 6.8 percent. Consumption of all end-use sectors increased between 1983 and 1984. Electric utilities, the leading energy consuming sector, rose 3.3 percent to 1,070 thousand tons.

Anthracite coal distribution to all consuming sectors in 1985 totaled 2,838 thousand tons, 29.7 percent below the 1980 level. Of that total, 60.3 percent or 1,712 thousand tons were distributed within Pennsylvania for consumption. The largest end-users in Pennsylvania were the residential and commercial sectors, which received a total of 786 thousand tons for consumption in 1985. While demand for anthracite has declined by all end-use sectors, significant decreases have occurred in the coking plant and electric utility industries. The use of anthracite by coking plants fell from 77 thousand tons in 1980 to 5 thousand tons by 1985, a decrease of 93.5 percent. In the electric utility industry, demand for anthracite was cut in half from 1,285 thousand tons in 1980 to 650 thousand tons in 1985.

Anthracite coal exports to domestic and foreign markets totaled 2,319 thousand tons in 1985, 25.4 percent less than the amount distributed in 1980. Of that total, 1,126 thousand tons were distributed to domestic markets and 1,193 thousand tons were distributed to foreign markets. Compared to 1984, domestic shipments in 1985 were up 7.3 percent and foreign shipments were up 47.1 percent. Although distribution of anthracite to Canada was 7.1 percent less in 1985 than in the previous year, overseas shipments were up substantially, by 83.2 percent.

Pennsylvania's bituminous coal industry, which accounts for 93.7 percent of the state's total coal output, has undergone considerable change in recent years. Preliminary production estimates reported by DER show that bituminous production was 57,388 thousand tons in 1986. Underground mines produced 36,914 thousand tons, 64.3 percent of the total. Surface mines produced 20,474 thousand tons, 35.7 percent of the total. The 1986 total production is a decrease of 35.6 percent from its maximum level of 89,167 thousand tons in 1979. Coal industry jobs, which were as high as 39,230 in 1978, were cut in half by 1985 to 19,661.

Consumption of bituminous coal increased 8.1 percent over 1983 to 55,765 thousand tons in 1984. Electric utilities, the leading energy consuming sector, increased consumption 1.9 percent in 1984 to 39,766 thousand tons. While utilities accounted for 32.0 percent of the total bituminous coal consumption in 1960, by 1984 the amount grew to 71.3 percent of the total. The industrial sector increased its demand by 28.6 percent in 1984 to 15,487 thousand tons. Industrial consumption was half of what it was in 1960, when its share of total bituminous demand was 64.3 percent. By 1984, its share dropped to 27.8 percent.

The coal distribution data in this report refers to coal distributed, both domestically and abroad, from specific coal-producing districts. These districts are a classification of coal fields. Districts 1 and 2, which are referred to most often, include all coal mined in Pennsylvania, Maryland and several counties in West Virginia. The majority of coal mined in these two districts is Pennsylvania-produced coal. Therefore, we identify the coal distributed from districts 1 and 2 as all Pennsylvania coal in this report.

The distribution of Pennsylvania bituminous coal produced in districts 1 and 2 to Pennsylvania end-users has declined from 46,061 thousand tons in 1980 to 36,709 thousand tons in 1985, a decrease of 20.3 percent. Total imports from other producing districts dropped 9.5 percent during this period to 13,972 thousand tons. Pennsylvania's electric utilities, the largest end-users of bituminous coal, have been consuming less Pennsylvania coal and importing a larger amount to burn from other producing districts. The demand for Pennsylvania coal has gone from 33,493 thousand tons in 1980 to 29,520 thousand tons in 1985. The 4 million ton difference was offset by the increase in coal imported into the state. By 1985, 9,402 thousand tons of bituminous coal were brought into the state for electric utility use.

The largest decrease in coal distribution has been in the coking industry. Distribution of bituminous coal to Pennsylvania's coke plants, including imports, has declined 53.4

percent between 1980 and 1985, falling from a total of 17,174 thousand tons to 7,996 thousand tons. The demand for exports of coking coal to other states also declined for this period. Exports fell from 8,905 thousand tons in 1980 to 5,172 thousand tons in 1985, a decrease of 41.9 percent.

Bituminous coal exports from Pennsylvania, both domestic and foreign, declined 18.6 percent over 1980 to 38,290 thousand tons in 1985. Of the total, 27,765 thousand tons were distributed to domestic markets and 10,525 thousand tons were distributed to foreign markets. While exports to Canada remained relatively stable, the significant change occurred in overseas exports. In 1980, the state exported 11,904 thousand tons of bituminous coal. By 1985, that amount was reduced to 6,755 thousand tons, a decrease of 43.3 percent.

TABLE 26

PENNSYLVANIA ANTHRACITE COAL INDUSTRY OVERVIEW
1980 - 1986
(Thousands of Tons)

	1980	1981	1982	1983	1984	1985	1986[1]
Production	5,983	5,125	3,993	2,923	3,894	5,229	3,833
Consumption	2,625	2,776	2,374	2,099	2,264	NA	NA
Exports[2]	3,108	2,792	1,799	1,865	1,860	2,319	1,431
Distribution[3]	4,035	3,747	3,003	3,292	2,904	2,838	1,580

[1] *Production figures for 1986 are preliminary. Export and distribution figures represent the first nine months of the year.*

[2] *Figures represent the total distribution of anthracite coal from district 24, which is the anthracite producing district in Pennsylvania. It includes domestic and foreign exports.*

[3] *Figures represent anthracite coal produced in district 24 and distributed throughout the U.S., including Pennsylvania, for consumption.*

NA Not available.

Sources: Pennsylvania Department of Environmental Resources, Bureau of Deep Mine Safety, Statistical Unit, *Annual Report on Mining Activities*, 1985; *Anthracite Accumulative Survey*, 1986.
U.S. Department of Energy, Energy Information Administration, *State Energy Data Report*, April 1986; *Coal Distribution* (1980-1986).

FIGURE 23

PENNSYLVANIA ANTHRACITE COAL
INDUSTRY OVERVIEW, 1980 – 1986

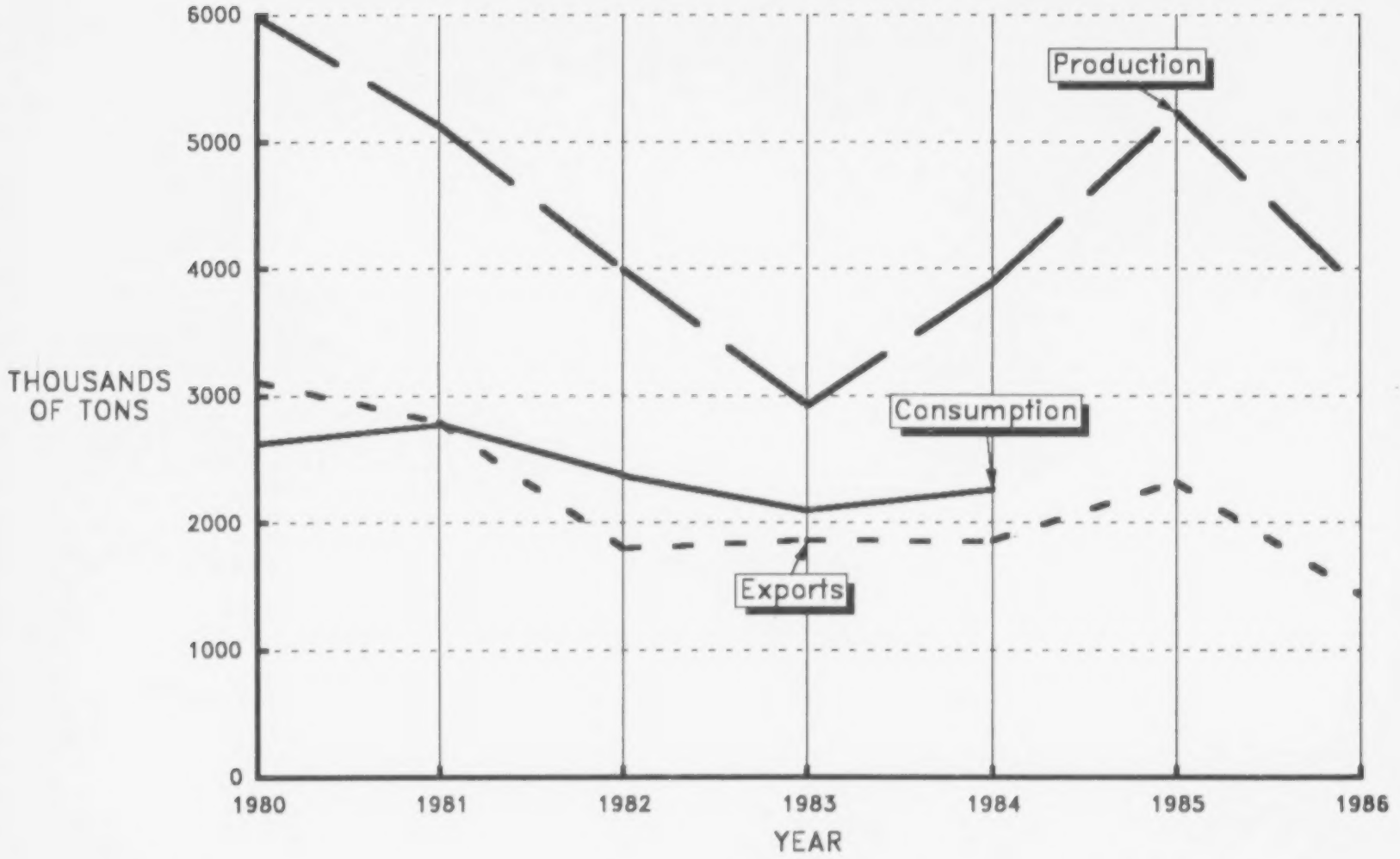


TABLE 27

PENNSYLVANIA ANTHRACITE COAL PRODUCTION, EMPLOYEES AND FATALITIES
1960 - 1986

Year	Production				Employees	Fatalities
	Underground	Bank	Stripping	Total		
	(Thousands of Tons)					
1960	7,576	3,007	7,139	17,722	20,269	35
1961	6,809	2,418	7,279	16,506	16,971	19
1962	6,724	2,829	6,943	16,496	14,704	26
1963	6,893	2,965	7,553	17,411	14,323	30
1964	6,262	3,013	7,249	16,524	13,584	24
1965	5,622	2,611	5,997	14,230	11,839	8
1966	4,051	2,663	5,317	12,031	9,621	5
1967	3,307	3,336	4,910	11,553	7,828	9
1968	2,535	3,572	4,918	11,025	6,682	4
1969	2,151	3,319	4,696	10,166	6,461	13
1970	1,667	2,957	4,625	9,249	6,286	4
1971	1,245	2,492	4,450	8,187	5,816	2
1972	897	2,073	3,492	6,462	4,431	3
1973	703	2,305	3,285	6,293	4,053	1
1974	632	2,646	2,813	6,091	3,831	2
1975	597	2,520	2,512	5,629	3,877	1
1976	516	1,817	2,958	5,291	3,641	1
1977	500	1,664	2,897	5,061	3,603	11
1978	595	1,480	2,962	5,037	3,472	1
1979	570	1,332	2,933	4,835	3,310	1
1980	583	1,945	3,455	5,983	3,429	3
1981	621	1,257	3,247	5,125	3,609	1
1982	475	992	2,526	3,993	3,641	0
1983	438	598	1,888	2,924	3,003	1
1984	642	544	2,708	3,894	3,239	0
1985	754	1,046	3,429	5,229	3,225	6
1986[1]	593	666	2,574	3,833	NA	3

[1] *Preliminary.*

NA Not available.

Sources: Pennsylvania Department of Environmental Resources, Bureau of Deep Mine Safety, Statistical Unit, *Annual Report on Mining Activities*, 1985.
Keystone Bituminous Coal Association, *Coal Data 1986*.

FIGURE 24

PENNSYLVANIA ANTHRACITE COAL PRODUCTION
AND EMPLOYMENT, 1960 – 1986

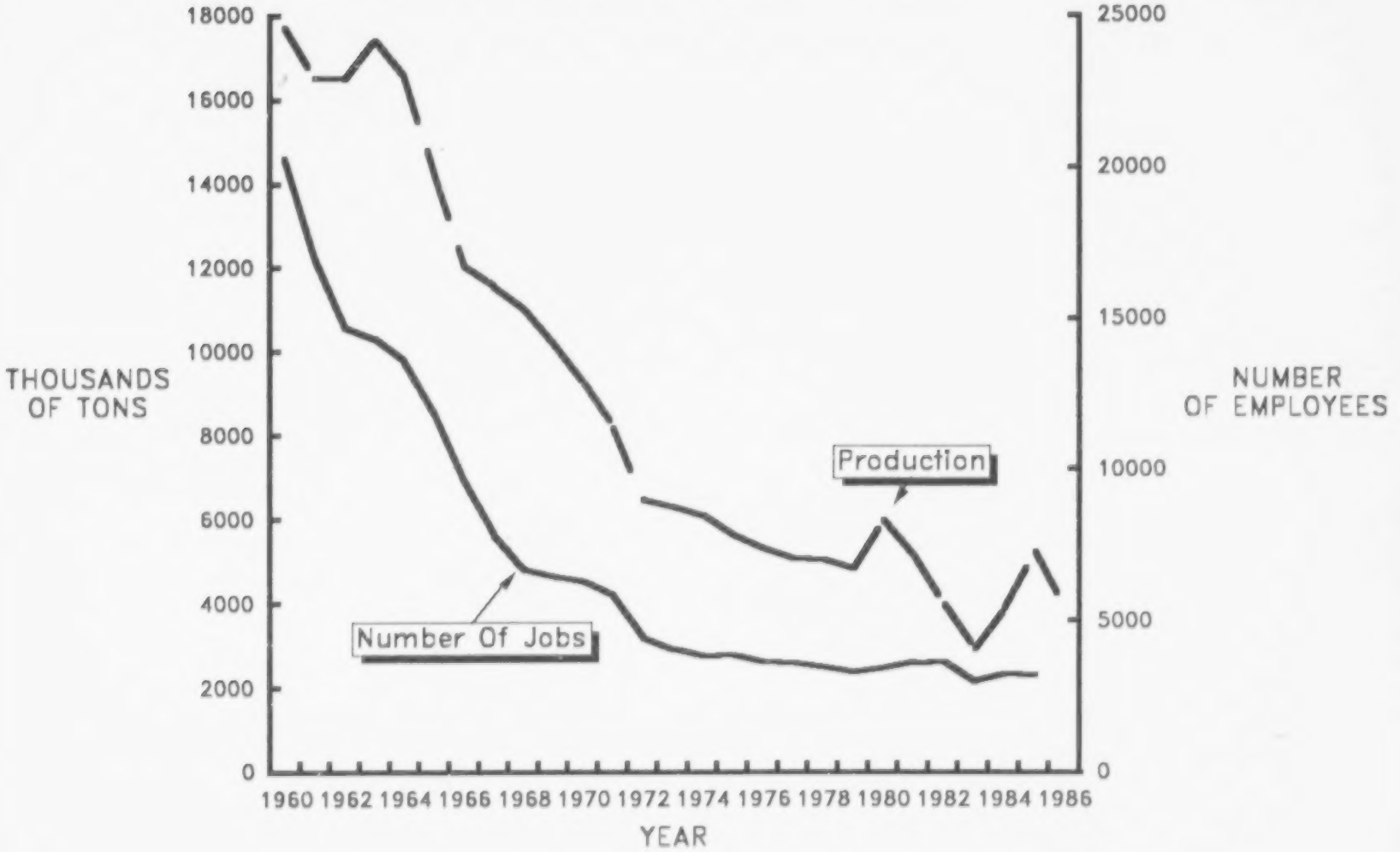


TABLE 28

PENNSYLVANIA ANTHRACITE COAL CONSUMPTION BY END-USER
1960 - 1984
(Thousands of Tons)

Year	Residential	Commercial	Industrial	Electric Utilities	Total
1960	4,584	3,056	2,071	2,627	12,338
1961	4,158	2,772	1,841	2,427	11,198
1962	3,621	2,414	1,759	2,238	10,032
1963	3,437	2,291	1,942	2,139	9,809
1964	3,282	2,188	2,210	2,235	9,915
1965	2,882	1,921	1,967	2,158	8,928
1966	2,444	1,629	1,709	2,192	7,974
1967	2,189	1,459	1,705	2,186	7,539
1968	2,069	1,379	1,518	2,203	7,169
1969	1,829	1,220	1,300	1,850	6,199
1970	1,757	1,172	1,090	1,897	5,916
1971	1,674	1,116	866	1,646	5,302
1972	1,287	858	632	1,584	4,361
1973	1,268	845	604	1,443	4,160
1974	1,120	747	636	1,498	4,001
1975	925	617	705	1,480	3,727
1976	876	584	787	1,350	3,597
1977	841	561	676	1,425	3,503
1978	694	463	578	1,064	2,799
1979	546	364	429	1,046	2,385
1980	664	443	567	951	2,625
1981	831	554	362	1,029	2,776
1982	644	430	225	1,075	2,374
1983	558	372	133	1,036	2,099
1984	609	406	179	1,070	2,264

Source: U. S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 25

PENNSYLVANIA ANTHRACITE COAL CONSUMPTION
BY END-USE SECTOR FOR SELECTED YEARS

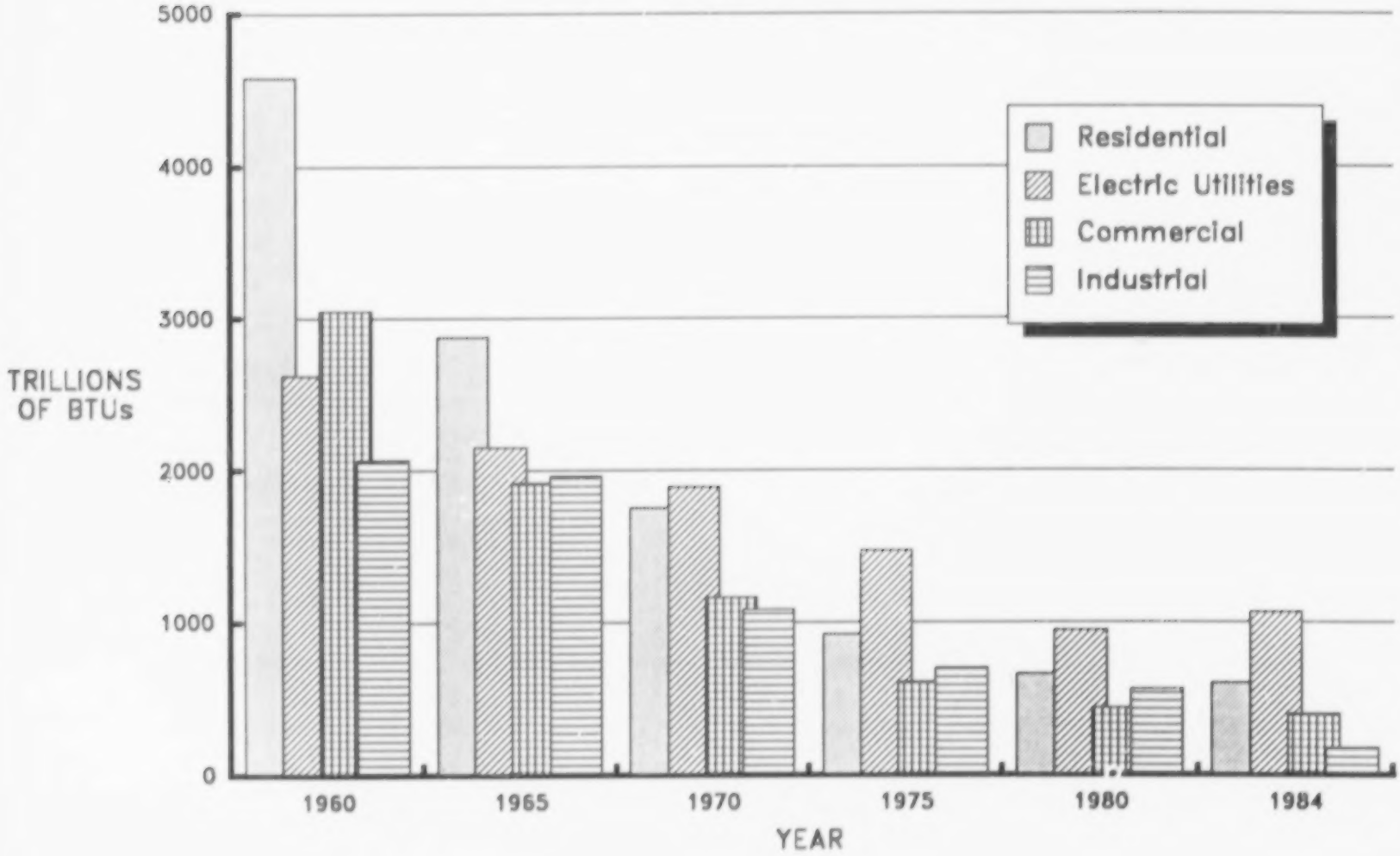


TABLE 29

PENNSYLVANIA ANTHRACITE DISTRIBUTED TO PENNSYLVANIA CONSUMING SECTORS
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[1]
Electric Utilities	1,285	940	708	1,199	565	650	258
Coke Plants	77	79	22	NM	0	5	1
Industrial	484	256	205	229	280	271	249
Residential/ Commercial	1,105	1,384	1,072	928	1,010	786	560
Total	**2,951**	**2,659**	**2,007**	**2,356**	**1,855**	**1,712**	**1,068**

[1] *Figures represent the first nine months of the year.*

NM Not meaningful. Value is less than 500 short tons.

Source: U.S. Department of Energy, Energy Information Administration. *Coal Distribution*, (1980-1986).

FIGURE 26

PENNSYLVANIA ANTHRACITE DISTRIBUTED TO
PENNSYLVANIA CONSUMING SECTORS, 1980 AND 1985

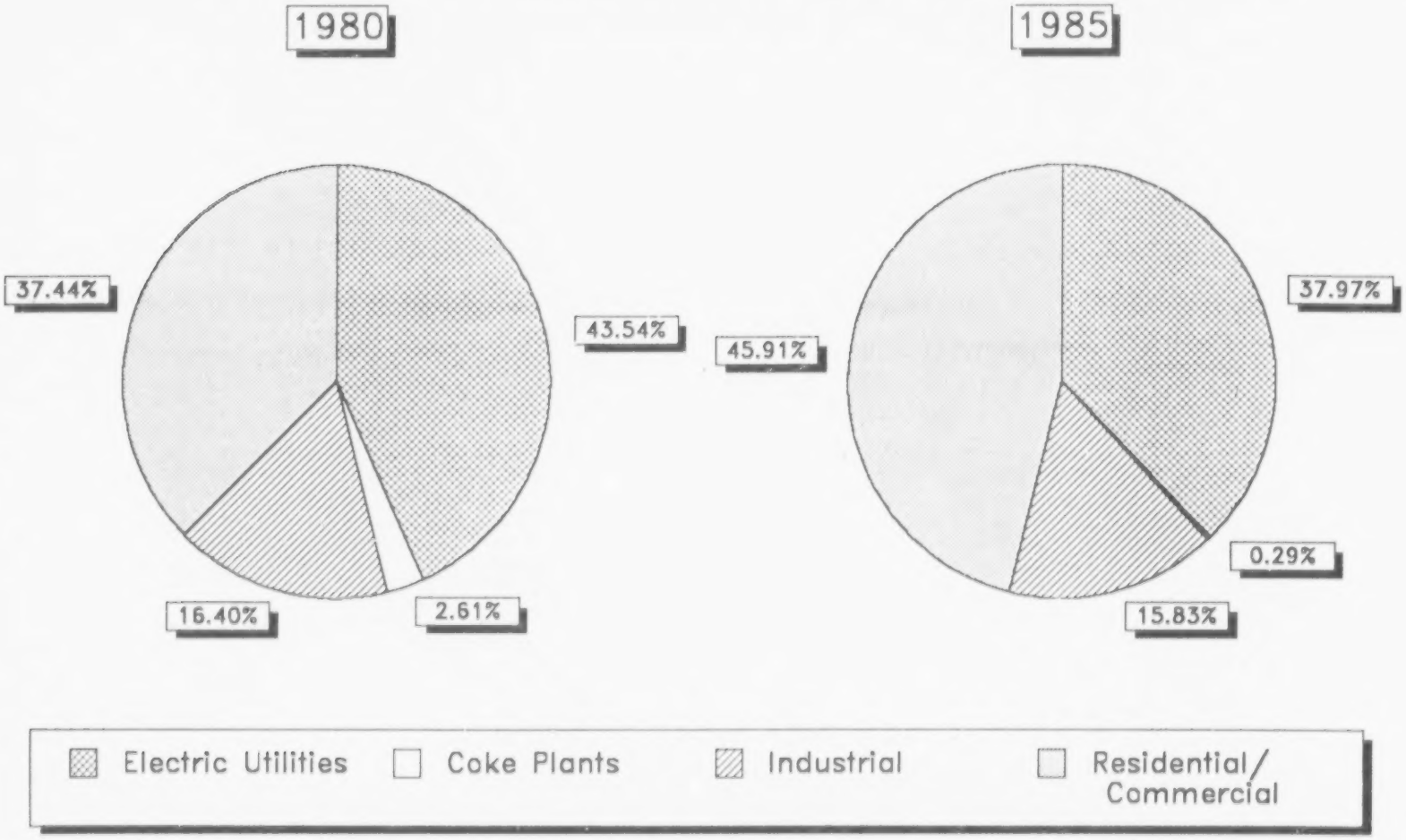


TABLE 30

PENNSYLVANIA ANTHRACITE DISTRIBUTED TO ALL U.S. CONSUMING SECTORS[1]
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[2]
Electric Utilities	1,287	940	708	1,203	565	651	259
Coke Plants	187	130	67	31	32	29	22
Industrial	1,025	696	584	700	817	800	463
Residential/ Commercial	1,536	1,981	1,644	1,358	1,490	1,358	836
Total	4,035	3,747	3,003	3,292	2,904	2,838	1,580

[1] *Figures represent anthracite coal produced in district 24 and distributed throughout the U.S., including Pennsylvania, for consumption.*

[2] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 27

PENNSYLVANIA ANTHRACITE DISTRIBUTED TO
ALL U. S. CONSUMING SECTORS, 1980 AND 1985

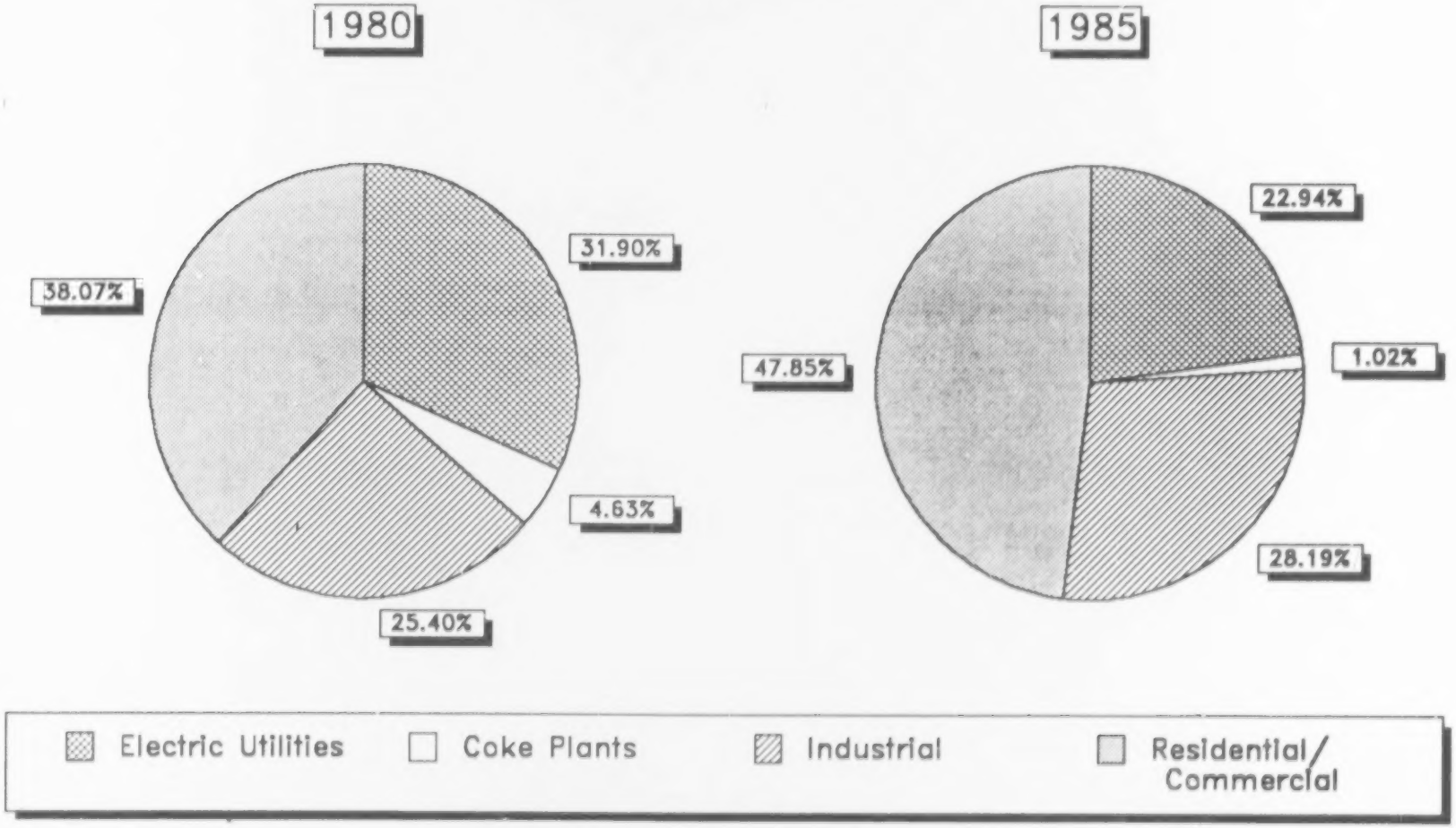


TABLE 31

PENNSYLVANIA ANTHRACITE COAL EXPORTS[1]
1980 - 1986
(Thousands of Tons)

	1980	1981	1982	1983	1984	1985	1986[2]
Domestic	1,084	1,088	996	936	1,049	1,126	562
Overseas	1,700	1,399	516	648	487	892	550
Canada	324	305	287	281	324	301	319
Foreign Total	2,024	1,704	803	929	811	1,193	869
Grand Total	**3,108**	**2,792**	**1,799**	**1,865**	**1,860**	**2,319**	**1,431**

[1] *Figures represent the total distribution of anthracite coal from district 24, which is the anthracite producing district in Pennsylvania.*
[2] *Figures represent the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 28

PENNSYLVANIA ANTHRACITE COAL EXPORTS, 1980 – 1985

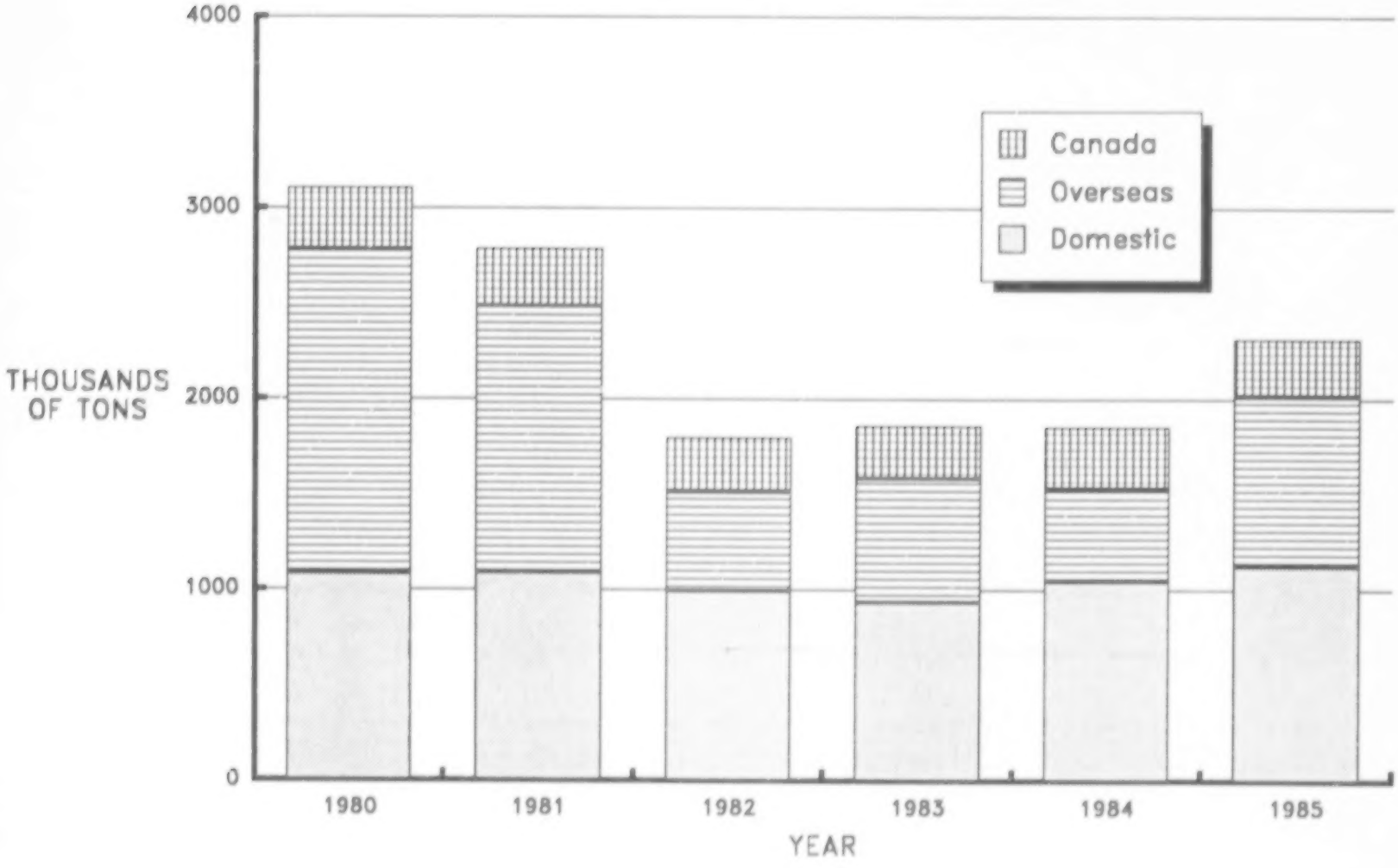


TABLE 32

PENNSYLVANIA ANTHRACITE COAL DOMESTIC EXPORTS[1] BY CONSUMING SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[3]
Electric Utilities	2	0	0	4	0	1	1
Coke Plants	110	51	45	31	2	24	21
Industrial	541	440	379	471	537	529	214
Residential/ Commercial	423	597	570	430	457	523	276
Unknown/ Not Revealable[2]	8	0	2	0	23	49	50
Total	1,084	1,088	996	936	1,049	1,126	562

[1] *Figures represent the total distribution of anthracite coal from district 24, which is the anthracite producing district in Pennsylvania.*

[2] *Includes all coal distribution data where the consumer use is unknown or withheld to avoid disclosure of individual company figures.*

[3] *Figures represent the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 29

PENNSYLVANIA ANTHRACITE COAL DOMESTIC EXPORTS
BY CONSUMING SECTORS, 1980 AND 1985

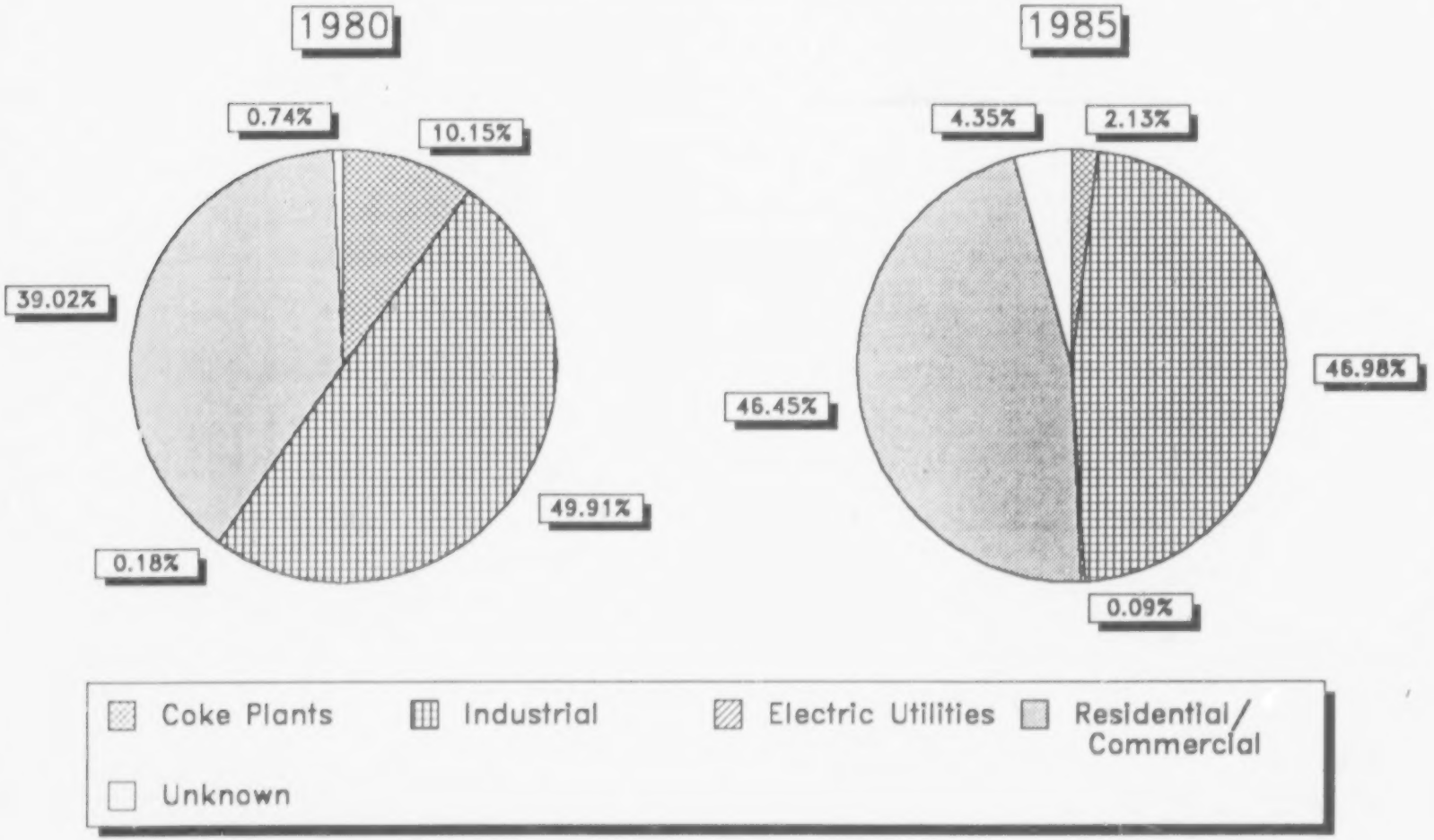


TABLE 33

PENNSYLVANIA ANTHRACITE COAL EXPORTS BY COUNTRY OF DESTINATION
1982 - 1986[1]
(Tons)

Country of Destination	1982	1983	1984	1985	1986
NORTH AMERICA					
Canada	315,915	291,761	301,150	277,263	360,173
Bahamas					5
Jamaica		11	40		
Netherlands Antilles		15			
Costa Rica				24	445
Mexico	14,882	4,393	14,720	12,510	27,803
Panama		16	83	135	72
Leeward & Windward			10		74
Trinidad & Tobago	1,528	154	501	1,631	1,937
Honduras	2	22	18	39	
Nicaragua			18		
Guatemala			27		
Total	332,327	296,372	316,567	291,602	390 509
SOUTH AMERICA					
Peru	53				
Ecuador	687				
Surinam	65	64			
Brazil	19,679	25,176	14,081	15,874	10,931
Chile	8		8		12
Paraguay	1				
Columbia			8	13	3
Venezuela	5,211	5,933	10,880	14,892	16,069
Bolivia		26	51		
Argentina	787	291	2,122		452
Total	26,491	31,490	27,150	30,779	27,467
EUROPE					
Finland			2		324
Turkey			5,556	5,547	6,280
Italy				15,747	738
Bulgaria				209,229	
Norway	5,973	11,612	37,787	25,578	27,304
Romania					7,716
Sweden		10		45	
Denmark	76	115	114	114	
Netherlands	89	30	52	31,805	7,657
France	56,692	58,232		18,913	
West Germany			119	322	217
Switzerland	174			8,847	
Ireland				24,537	
United Kingdom	47	92		45,297	
Belgium & Luxembourg	50	19	138	41,069	
Yugoslavia		55	6		
Greece	26				
Spain	5,651				7,496
Total	68,778	70,165	43,774	427,050	57,732

Country of Destination	1982	1983	1984	1985	1986
ASIA					
Korea, Republic of	549,912	357,212	291,659	535,084	667,914
Singapore	218	29			8
Indonesia		65	7	83	
Pakistan	5	36	5	22	
India			272	520	
Saudi Arabia	373	321	122	347	
Jordan			332	95	
Philippines	1,389			12	53
Malaysia			144		
Japan	13	227			13
Hong Kong		61			
China	49				101
Iraq	76				
Kuwait	32				
Total	552,067	357,951	292,541	536,163	668,089
OCEANIA & AUSTRALIA					
Australia	243	247	277	505	5
New Zealand			20		5
French Pacific Isl.		19,891			
Papua New Guinea	1				
Total	244	20,138	297	505	10
AFRICA					
Liberia	106				
South Africa, Republic of			13		
Egypt			53	20	62
Morocco					22,035
Nigeria				5	
Libya			5		
Total	106	0	71	25	22,097
Total, All Countries	980,013	776,116	680,400	1,286,124	1,165,904

[1] *Figures represent the first ten months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Weekly Coal Production.*

TABLE 34

PENNSYLVANIA ANTHRACITE COAL EXPORTS BY CUSTOMS DISTRICT
1982 - 1986
(Tons)

Custom District	1982	1983	1984	1985	1986[1]
Philadelphia, PA	560,682	431,799	431,784	764,597	824,305
New York, NY	328,761	286,784	185,685	449,196	261,312
Buffalo, NY	41,831	12,513	8,965	11,098	15,929
Ogdensburg, NY	17,662	20,834	21,619	12,409	15,009
Baltimore, MD	374	506	6,642	112	804
Norfolk, VA	143	139	570	27	578
St. Albans, VT	149	300	150		
Portland, ME	82	83			
Eastern Total	949,684	752,958	655,415	1,237,439	1,117,937
Laredo, TX	14,558	4,287	14,257	12,393	25,525
Houston, TX	826	157	51		140
Port Arthur, TX	180		50		
El Paso, TX					1,936
New Orleans, LA	9,253	3,246	6,679	34,706	11,556
Charleston, SC	76		2	441	
Miami, FL		108	186	133	121
Tampa, FL	931				
Savannah, GA			441		
Mobile, AL	2	27	-		
Virgin Islands					20
Southern Total	25,826	7,825	21,666	47,673	39,298
Seattle, WA	394	497	333	132	414
San Francisco, CA	314	158	119		56
Los Angeles, CA	50	243	20		5
San Diego, CA				52	342
Great Falls, MT			1,575		
Western Total	758	898	2,047	184	817
Detroit, MI	3,030	11,301	524	580	7,601
Fembina, ND	391	2,894	180	160	251
Duluth, MN		40	78	78	
Northern Total	3,421	14,235	782	828	7,852
Other	324	200	490		
Total	980,013	776,116	680,409	1,286,124	1,165,904

[1] *Figures represent the first ten months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Weekly Coal Production*.

TABLE 35

PRINCIPAL DISTRIBUTION OF PENNSYLVANIA ANTHRACITE COAL
1980 AND 1985
(Thousands of Tons)

	1980					1985			
	Residential/ Commercial	Other Industrial	Coke Plants	Electric Utilities		Residential/ Commercial	Other Industrial	Coke Plants	Electric Utilities
Pennsylvania	1,105	484	77	1,258	Pennsylvania	786	271	5	650
New York	224	123	22		New York	224	85		NM
Massachusetts	61	2			New Jersey	97	179		
New Jersey	56	18		2	Massachusetts	86	4		NM
Connecticut	15	NM		NM	Connecticut	37	1		NM
Maine	13	2			Maine	16	3		
Vermont	11	NM			Vermont	12	3		
Maryland	9	1		NM	Ohio	11	59		NM
Ohio	7	57	33		New Hampshire	8	2		
Kentucky	7	88			Maryland	7	2		
Delaware	3	1		NM	Rhode Island	5	NM		
New Hampshire	3	1			West Virginia	3	8		
Rhode Island	3	1			Iowa	2	23		
Michigan	2	29			Michigan	2	13		
Virginia	2	9		NM	Virginia	2	7	NM	
Illinois	1	62			Delaware	2	1		NM
Wisconsin	1	2		NM	Louisiana	2	NM		
Nevada	1	2			Illinois	1	36		NM
Indiana	1	1			South Carolina	1	25		
Tennessee	NM	27	27		Wisconsin	1	3		
South Carolina	NM	16			Indiana	1	1	1	
West Virginia	NM	9			Georgia	1	NM		
Iowa		33		NM	Alabama	NM	11	23	1
Alabama		21	25	NM	Texas	NM	1		
Missouri		2	3	NM	Kentucky		34		NM
Texas		2			Tennessee		10		
					Florida		5		NM

NM Not meaningful. Quantity less than 500 short tons.

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980 and 1985).

TABLE 36

PENNSYLVANIA BITUMINOUS COAL INDUSTRY OVERVIEW
1980 - 1986
(Thousands of Tons)

	1980	1981	1982	1983	1984	1985	1986[1]
Production	87,069	78,083	74,755	68,733	73,806	65,535	57,388
Consumption	63,035	57,339	50,000	51,599	55,765	NA	NA
Imports[2]	15,442	15,018	12,608	13,049	16,739	13,972	11,078
Exports[3]	47,048	48,155	43,975	36,761	40,401	38,290	26,680
Distribution[4]	77,766	70,707	66,028	64,635	72,348	64,473	48,908

[1] *Production figures for 1986 are preliminary. Import, export, and distribution figures represent the first nine months of the year.*

[2] *Figures represent bituminous coal produced outside districts 1 and 2 and distributed within Pennsylvania for consumption.*

[3] *Figures represent bituminous coal produced in districts 1 and 2 and distributed domestically and abroad.*

[4] *Figures represent bituminous coal produced in districts 1 and 2 and distributed throughout the United States, including Pennsylvania, for consumption.*

NA Not available.

Sources: Pennsylvania Department of Environmental Resources, Bureau of Deep Mine Safety, Statistical Unit, *Annual Report on Mining Activities, 1985; Bituminous Coal Accumulative Survey, 1986.* U.S. Department of Energy, Energy Information Administration, *State Energy Data Report*, April 1986; *Coal Distribution* (1980-1986).

FIGURE 30

PENNSYLVANIA BITUMINOUS COAL INDUSTRY
OVERVIEW, 1980 – 1986

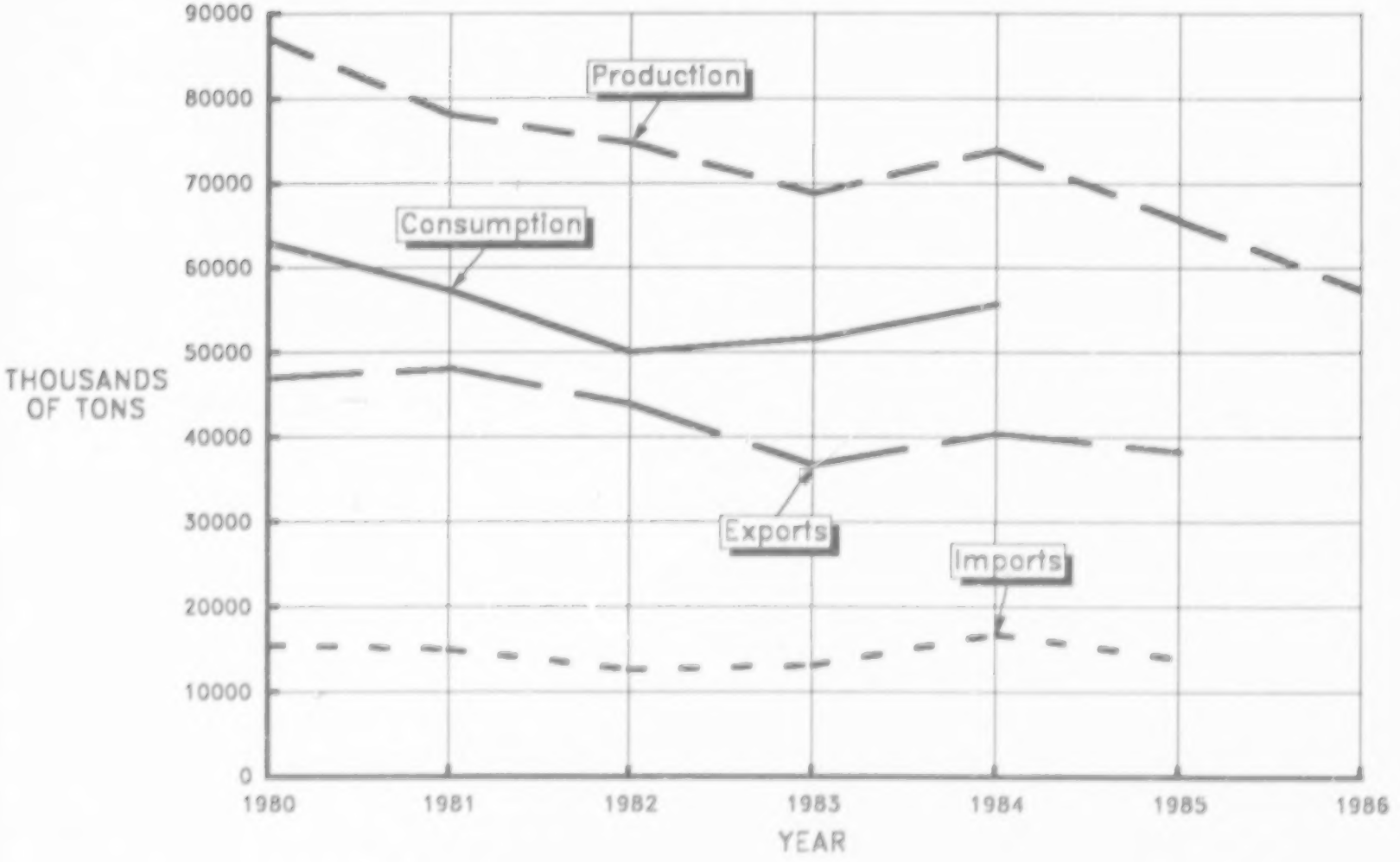


TABLE 37

PENNSYLVANIA BITUMINOUS COAL PRODUCTION, EMPLOYEES AND FATALITIES 1960 - 1986

Year	Production				Employees	Fatalities	Fatalities per 1000 Employees
	Underground	Surface[1]	Total	Stripping[2]			
	(Thousands of Tons)						
1960	44,312	21,284	65,596	21,029	33,396	26	0.78
1961	41,959	20,893	62,852	20,893	29,633	22	0.74
1962	42,992	22,656	65,648	22,256	27,264	59	2.16
1963	46,322	24,937	71,259	24,234	26,216	21	0.80
1964	52,449	24,873	77,322	24,020	26,008	18	0.69
1965	55,787	24,333	80,120	23,681	25,206	33	1.31
1966	56,040	25,410	81,450	24,701	24,729	28	1.13
1967	56,632	22,469	79,101	21,729	23,811	27	1.13
1968	54,645	21,070	75,715	20,512	23,117	29	1.25
1969	56,055	22,130	78,185	21,653	22,969	25	1.09
1970	55,341	24,751	80,092	24,161	24,667	30	1.21
1971	44,356	27,421	71,777	26,862	26,549	32	1.21
1972	49,608	26,255	75,863	25,717	25,627	19	0.74
1973	46,327	30,470	76,797	29,327	26,722	17	0.64
1974	42,325	37,717	80,042	36,056	29,108	20	0.68
1975	45,113	39,366	84,479	37,578	34,170	17	0.49
1976	44,329	41,419	85,748	40,242	36,240	19	0.52
1977	38,761	47,661	86,422	46,605	38,307	12	0.31
1978	33,210	47,133	80,343	46,552	39,230	7	0.18
1979	43,351	45,816	89,167	45,117	37,051	13	0.35
1980	42,891	44,178	87,069	43,447	35,071	13	0.37
1981	33,957	44,126	78,083	43,543	32,229	13	0.40
1982	36,501	38,254	74,755	37,821	26,819	5	0.19
1983	37,308	31,425	68,733	31,148	23,872	12	0.50
1984	37,528	36,278	73,806	35,908	22,677	8	0.35
1985	36,077	29,458	65,535	29,170	19,661	4	0.20
1986[3]	36,914	20,474	57,388	20,149	NA	5	0.17

[1] *Includes strip, auger and reclaimed coal operations.*
[2] *Included in total production.*
[3] *Preliminary.*

NA Not available.

Sources: Pennsylvania Department of Environmental Resources, Bureau of Deep Mine Safety, Statistical Unit, *Annual Report on Mining Activities*, 1985.
Keystone Bituminous Coal Association, *Coal Data 1986*.

FIGURE 31

PENNSYLVANIA BITUMINOUS COAL PRODUCTION
AND EMPLOYMENT, 1960 – 1986

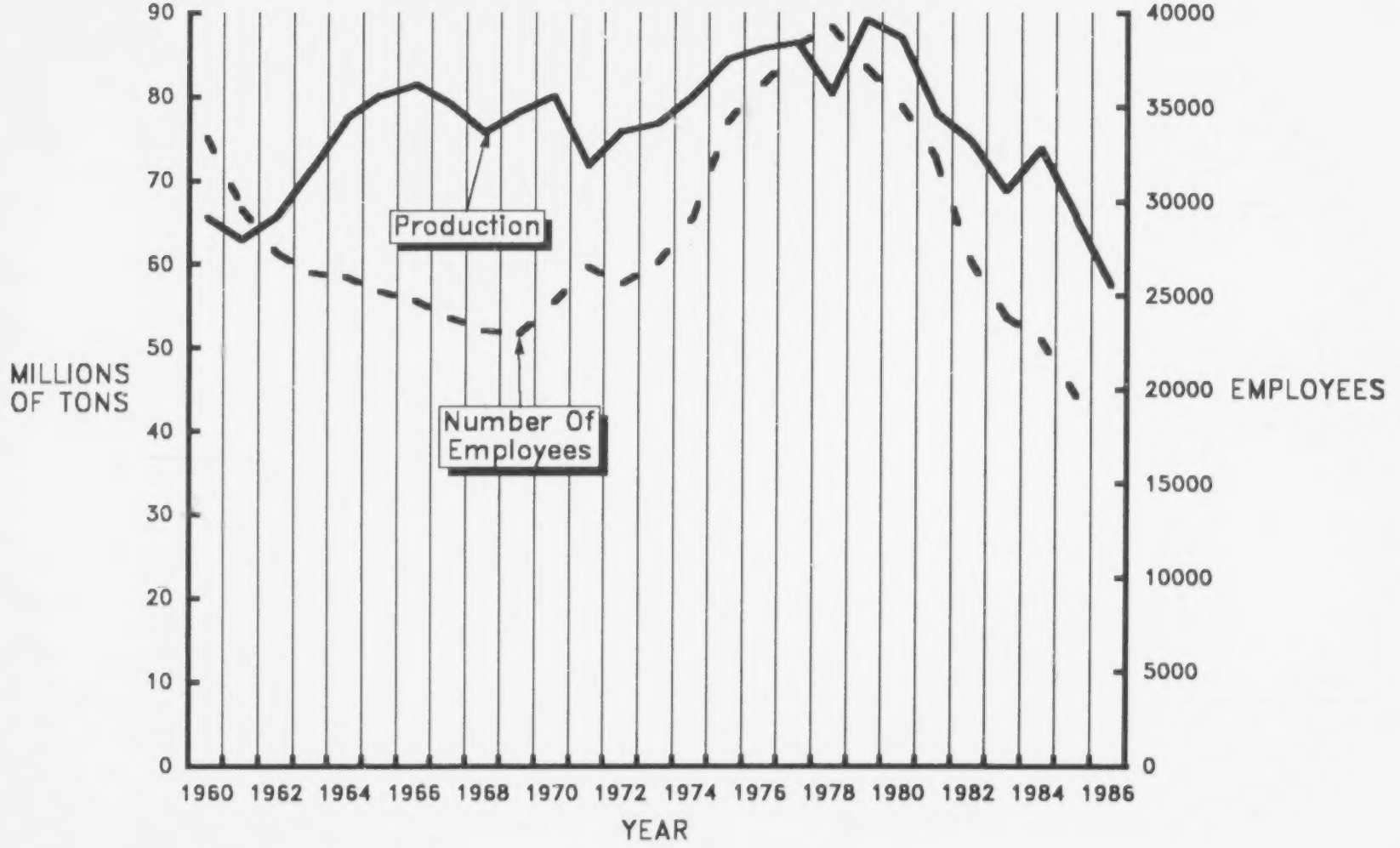


TABLE 38

PENNSYLVANIA BITUMINOUS COAL CONSUMPTION BY END-USE SECTOR
1960 - 1984
(Thousands of Tons)

Year	Residential	Commercial	Industrial	Transportation	Electric Utilities	Total
1960	435	808	31,074	547	15,435	48,299
1961	387	718	28,345	131	15,921	45,502
1962	361	670	30,069	123	17,186	48,409
1963	303	563	32,012	122	18,000	51,000
1964	250	464	36,303	137	19,919	57,073
1965	277	514	38,049	127	21,024	59,991
1966	285	529	38,096	115	21,954	60,979
1967	255	474	36,696	90	22,452	59,967
1968	218	404	36,571	81	24,211	61,485
1969	209	387	33,518	57	24,623	58,794
1970	244	453	34,668	56	27,245	62,666
1971	236	438	29,216	39	30,592	60,521
1972	149	277	28,887	30	33,469	62,812
1973	235	454	30,245	22	37,351	68,307
1974	134	249	29,653	15	33,554	63,605
1975	115	214	27,807	5	35,180	63,321
1976	115	214	27,630	2	36,097	64,058
1977	99	183	24,732	2	35,026	60,042
1978	266	493	24,313	0	35,312	60,384
1979	140	260	27,190	0	40,402	67,992
1980	151	280	21,089	0	41,515	63,035
1981	146	272	18,265	0	38,656	57,339
1982	228	423	10,451	0	38,898	50,000
1983	192	356	12,041	0	39,010	51,599
1984	179	333	15,487	0	39,766	55,765

Source: U. S. Department of Energy, Energy Information Administration, *State Energy Data Report, Consumption Estimates, 1960-1984*, April 1986.

FIGURE 32

PENNSYLVANIA BITUMINOUS COAL CONSUMPTION
BY END-USE SECTOR FOR SELECTED YEARS

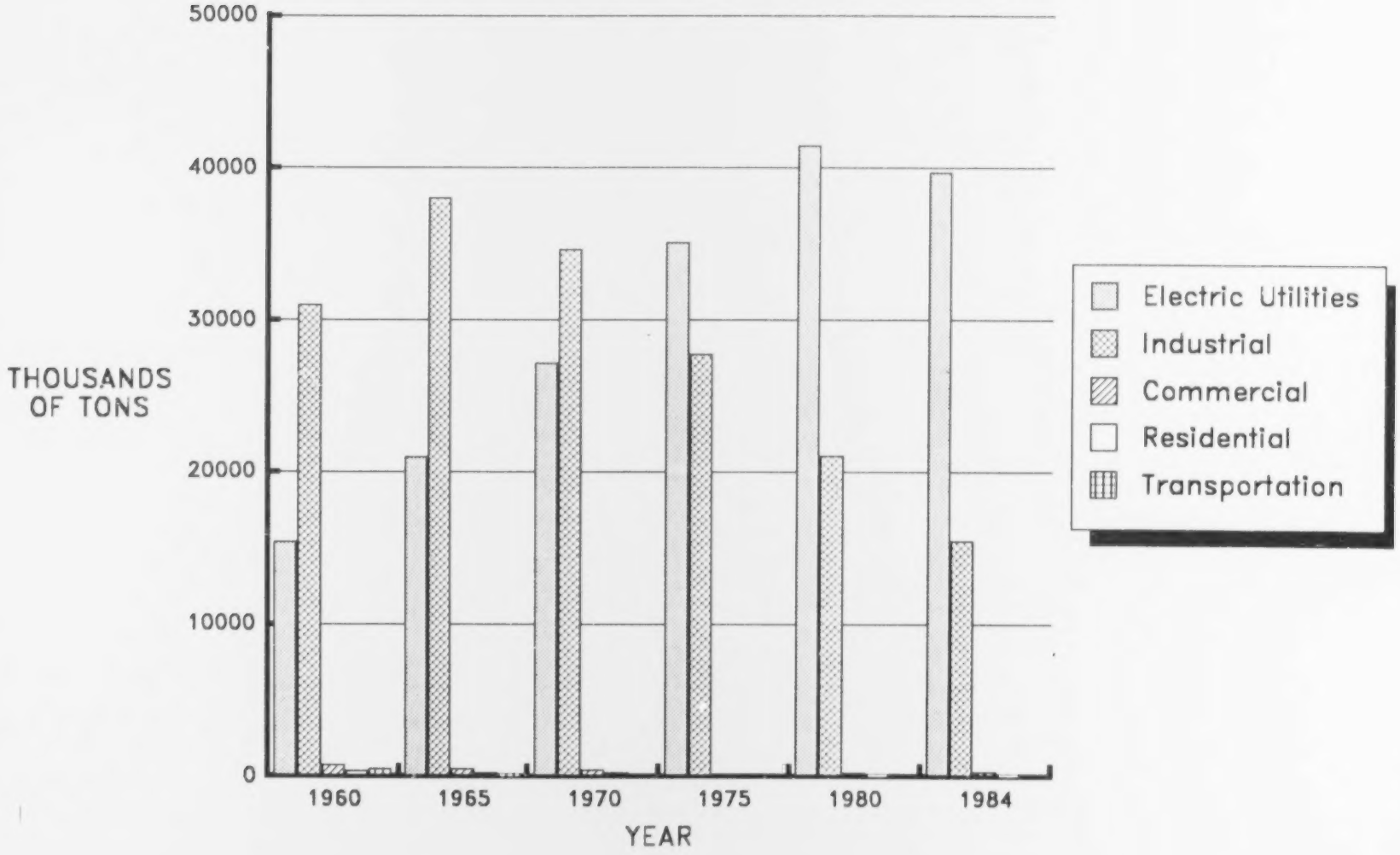


TABLE 39

DISTRIBUTION OF BITUMINOUS COAL PRODUCED IN PENNSYLVANIA[1] BY CONSUMING SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[2]
Electric Utilities	51,987	49,548	50,309	48,989	54,175	48,373	38,035
Coke Plants	17,959	13,828	9,311	9,188	10,447	9,411	6,427
Other Industrial	7,103	6,646	5,438	5,673	6,426	5,674	3,594
Residential/Commercial	717	685	970	785	1,300	1,015	852
Total	**77,766**	**70,707**	**66,028**	**64,635**	**72,348**	**64,473**	**48,908**

[1] *Figures represent bituminous coal produced in districts 1 and 2 and distributed throughout the U.S., including Pennsylvania, for consumption.*

[2] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 33

DISTRIBUTION OF BITUMINOUS COAL PRODUCED IN PENNSYLVANIA BY CONSUMING SECTOR, 1980 – 1985

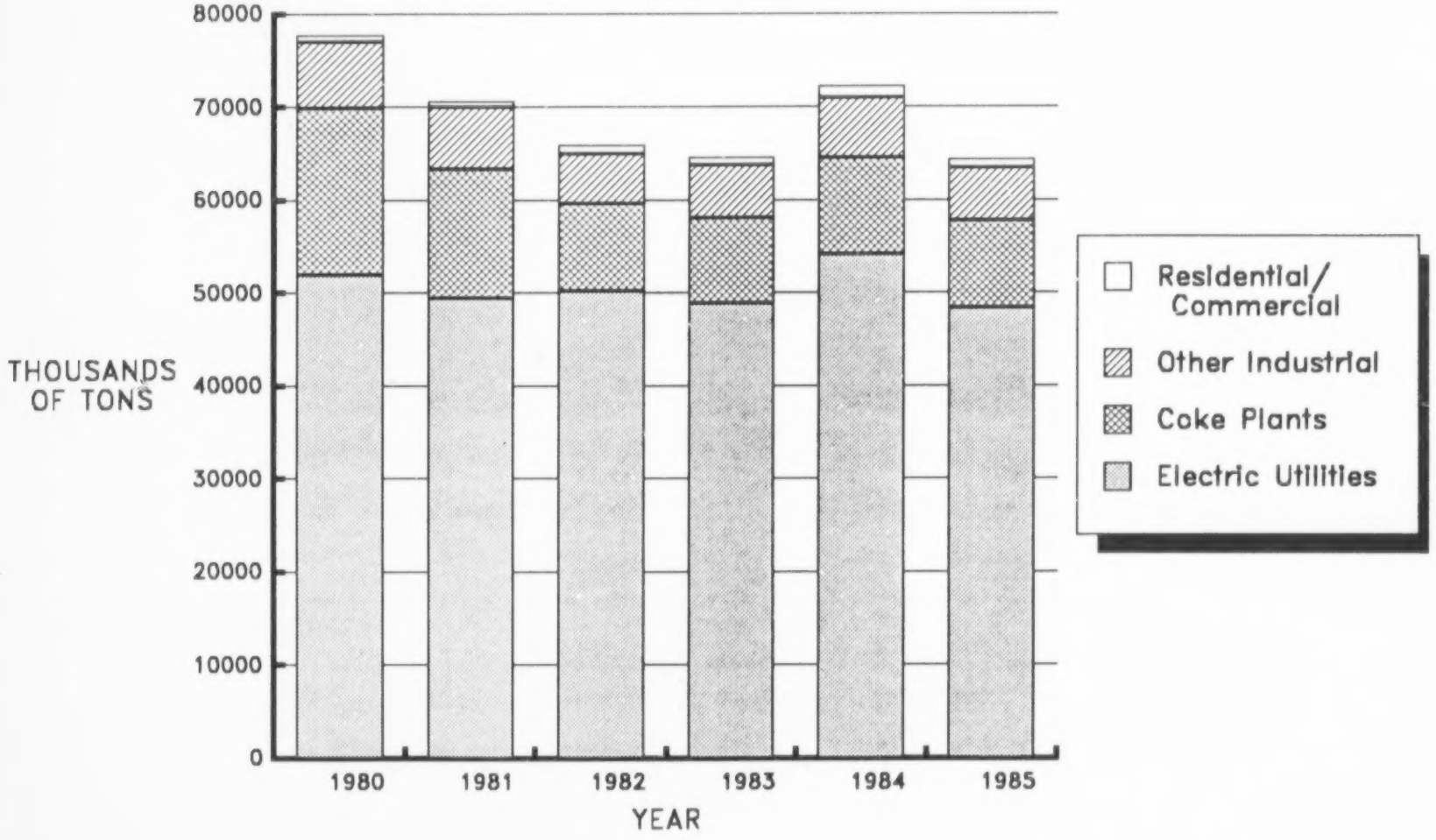


TABLE 40

PENNSYLVANIA BITUMINOUS COAL IMPORTS[1] BY CONSUMING SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[2]
Electric Utilities	6,624	6,921	8,210	7,824	9,400	9,402	7,716
Coke Plants	8,120	7,230	3,659	4,226	5,534	3,757	2,603
Other Industrial	680	816	669	873	1,738	728	673
Residential/ Commercial	18	51	70	126	67	85	84
Total	**15,442**	**15,018**	**12,608**	**13,049**	**16,739**	**13,972**	**11,076**

[1] *Figures represent bituminous coal produced outside districts 1 and 2 and distributed within Pennsylvania for consumption.*
[2] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 34

PENNSYLVANIA BITUMINOUS COAL IMPORTS BY CONSUMING SECTOR, 1980 – 1985

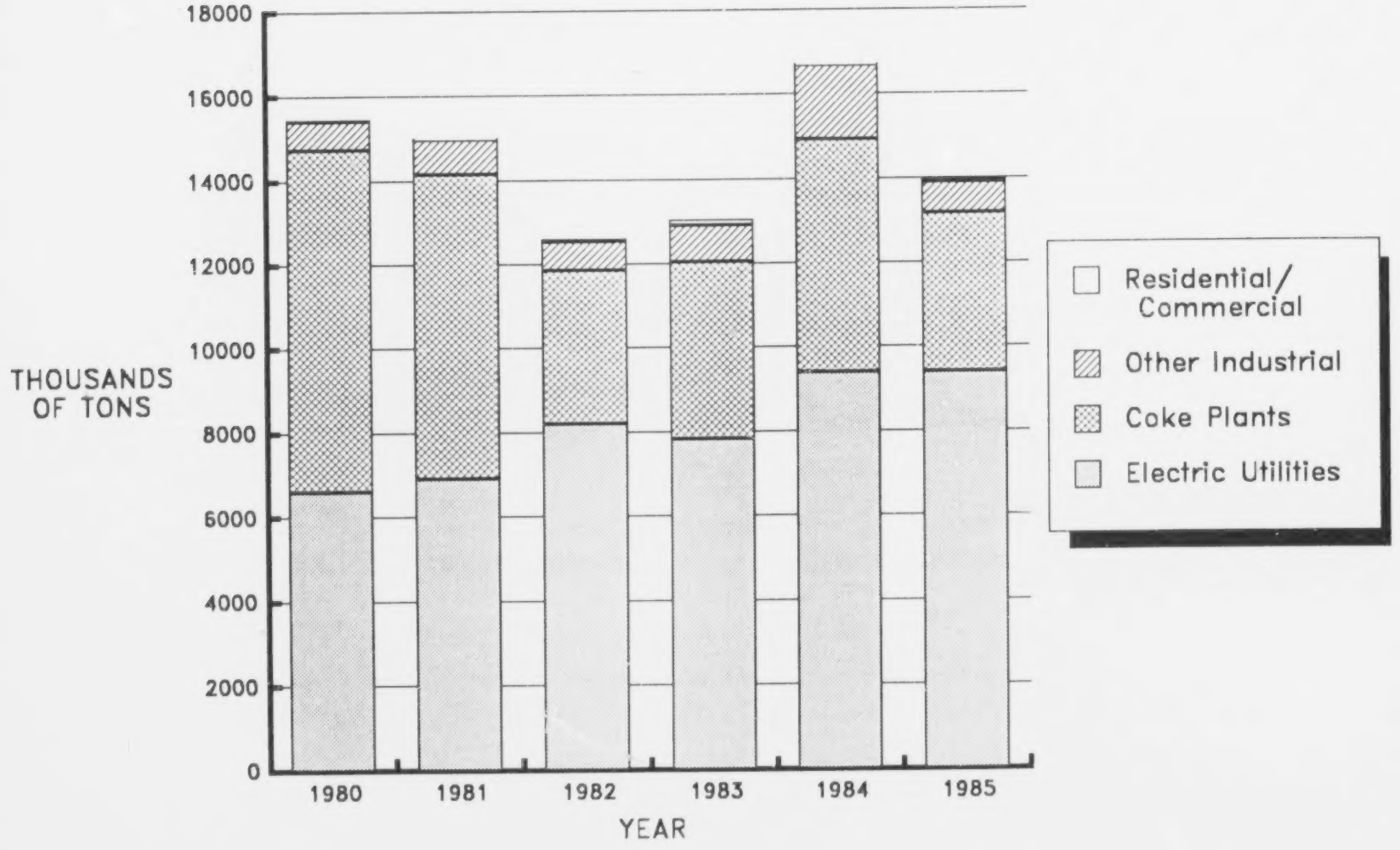


TABLE 41

PENNSYLVANIA BITUMINOUS COAL IMPORTS[1] BY PRODUCING DISTRICTS 1980 AND 1985

(Thousands of Tons)

District	Electric Utilities	Coke Plants	Other Industrial	Residential/ Commercial	Total
		1980			
District 3 & 6	4,004	529	133	7	4,673
District 4	2,473		218	5	2,696
District 7		3,311	12		3,323
District 8	36	4,280	316	4	4,636
District 13	111				111
District 22 & 23			1	2	3
Total	**6,624**	**8,120**	**680**	**18**	**15,442**
		1985			
District 3 & 6	5,415	193	211	83	5,902
District 4	3,918		28		3,946
District 7		1,731	212		1,943
District 8	13	1,833	274	2	2,122
District 9	56		3		59
Total	**9,402**	**3,757**	**728**	**85**	**13,972**

[1] *Figures represent bituminous coal produced outside districts 1 and 2 and distributed within Pennsylvania for consumption.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980 and 1985).

FIGURE 35

PENNSYLVANIA BITUMINOUS COAL IMPORTS
BY PRODUCING DISTRICT, 1980 AND 1985

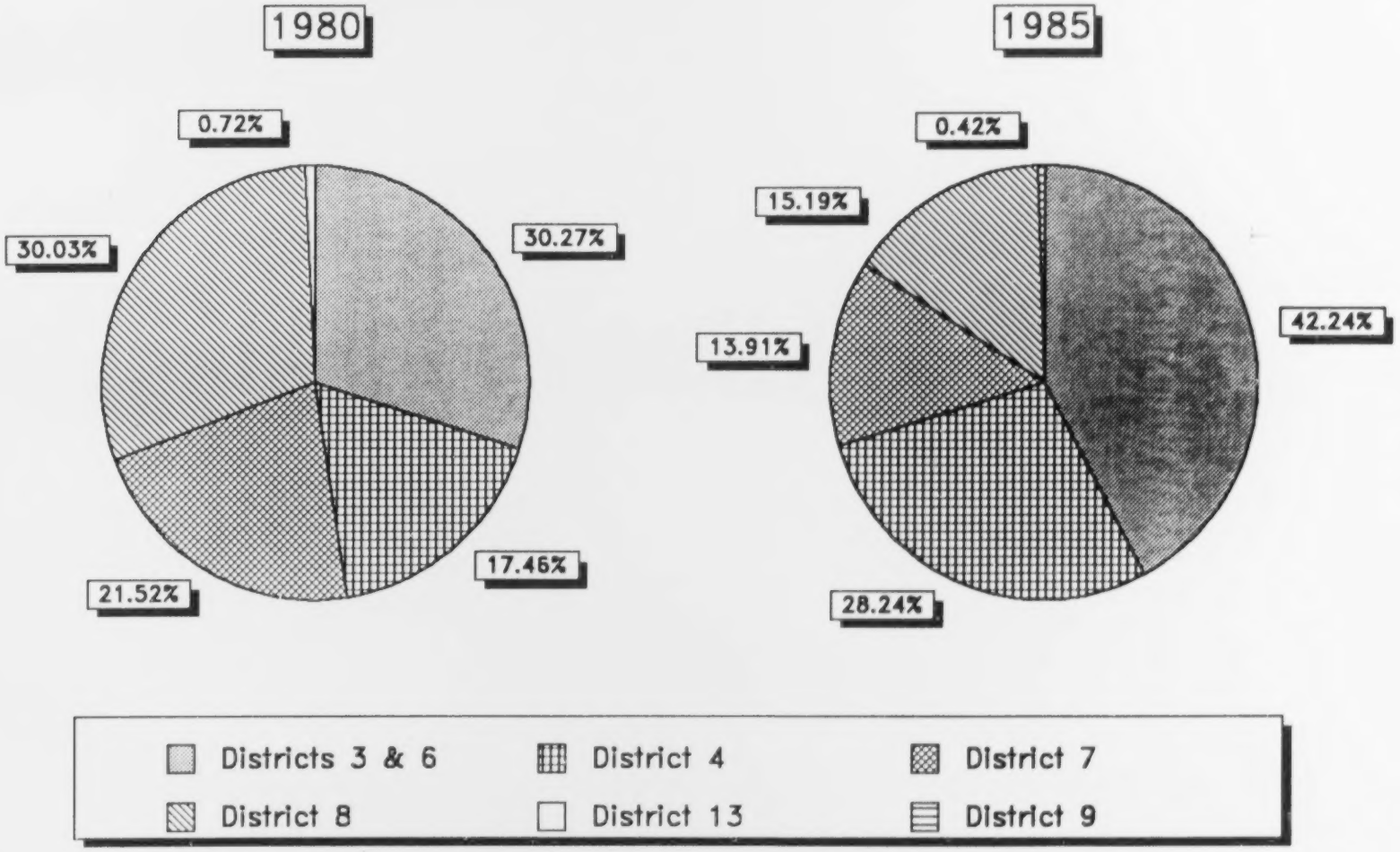


TABLE 42

DISTRIBUTION OF BITUMINOUS COAL PRODUCED AND CONSUMED IN PENNSYLVANIA BY SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[1]
Electric Utilities	33,493	30,652	30,856	29,915	32,999	29,520	23,209
Coke Plants	9,054	6,425	3,421	4,257	5,140	4,239	2,972
Other Industrial	3,116	2,821	2,401	2,589	2,913	2,596	1,860
Residential/ Commercial	398	316	511	370	400	354	1,267
Total	**46,061**	**40,214**	**37,189**	**37,131**	**41,452**	**36,709**	**29,308**

[1] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 36

DISTRIBUTION OF BITUMINOUS COAL PRODUCED AND CONSUMED IN PENNSYLVANIA BY SECTOR, 1980 – 1985

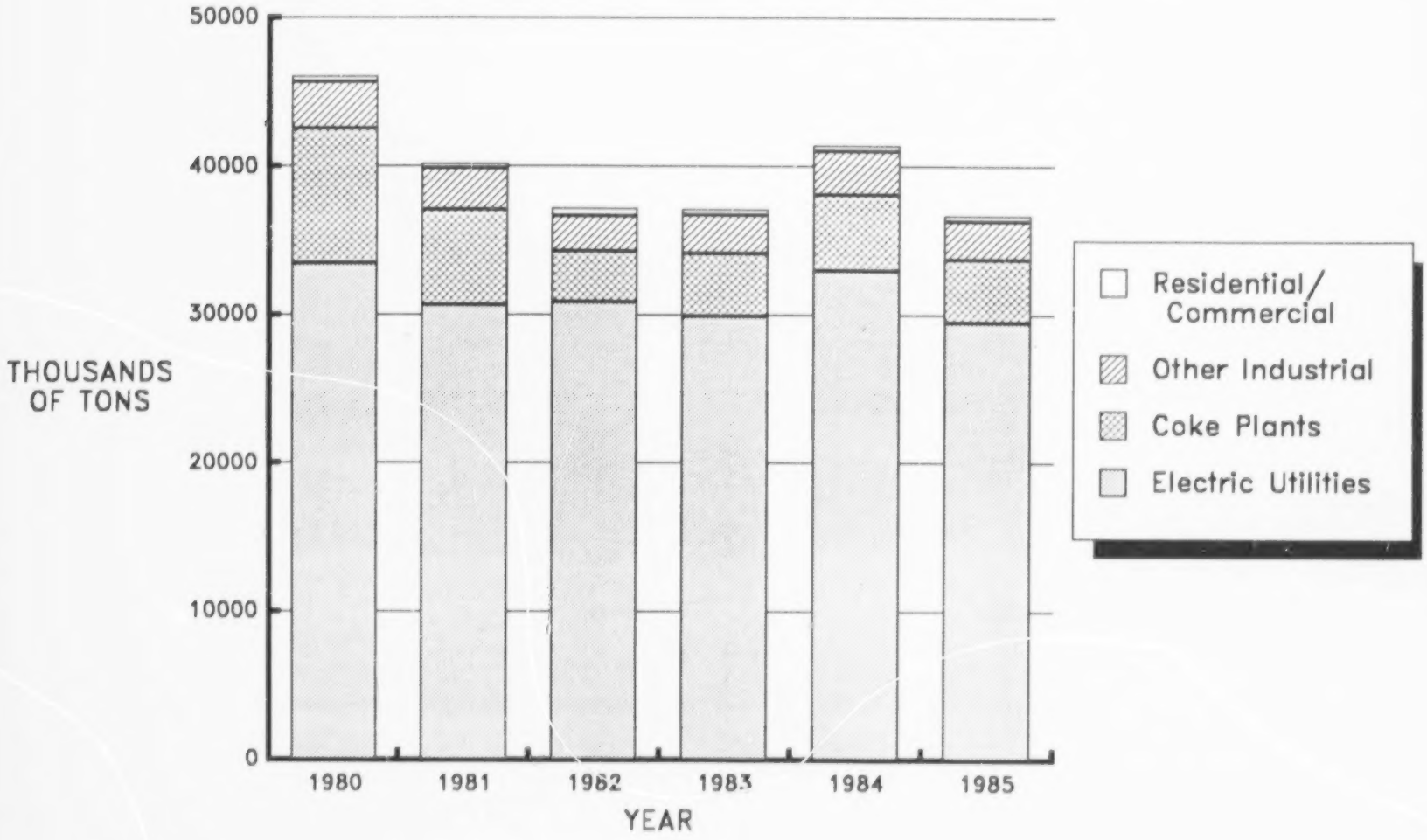


TABLE 43

PENNSYLVANIA BITUMINOUS COAL DOMESTIC EXPORTS[1] BY CONSUMING SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[2]
Electric Utilities	18,494	18,896	19,453	19,074	21,176	18,853	14,826
Coke Plants	8,905	7,403	5,890	4,931	5,307	5,172	3,455
Other Industrial	3,987	3,825	3,037	3,084	3,513	3,078	1,734
Residential/ Commercial	287	295	430	360	512	301	211
Unknown/ Not Revealable[3]	32	74	29	55	388	360	374
Total	**31,705**	**30,493**	**28,839**	**27,504**	**30,896**	**27,764**	**20,600**

[1] *Figures represent bituminous coal produced in districts 1 and 2 and distributed outside Pennsylvania.*
[2] *Figures are based on the first nine months of the year.*
[3] *Includes all coal distribution data where the consumer use is unknown or withheld to avoid disclosure of individual company figures.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 37

PENNSYLVANIA BITUMINOUS COAL DOMESTIC EXPORTS BY CONSUMING SECTOR, 1980 – 1985

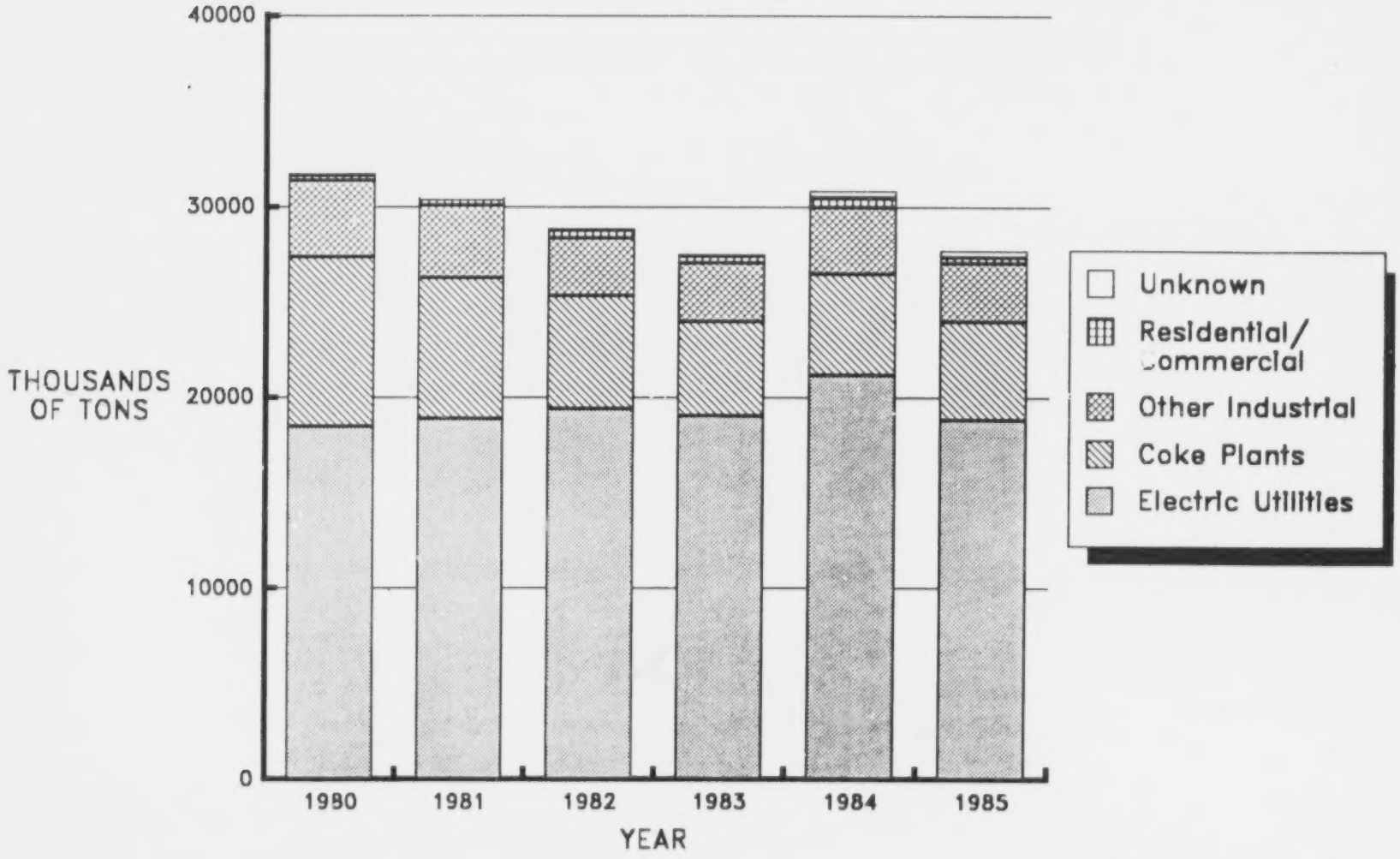


TABLE 44

PENNSYLVANIA BITUMINOUS COAL EXPORTS[1]
1980-1986
(Thousands of Tons)

	1980	1981	1982	1983	1984	1985	1986[2]
Domestic	31,705	30,493	28,838	27,504	30,896	27,765	20,602
Overseas	11,904	13,289	10,254	5,832	5,165	6,755	4,857
Canada	3,439	4,373	4,883	3,425	4,340	3,770	3,221
Foreign Total	15,343	17,662	15,137	9,257	9,505	10,525	8,078
Grand Total	**47,048**	**48,155**	**43,975**	**36,761**	**40,401**	**38,290**	**28,680**

[1] *Figures represent bituminous coal produced in districts 1 and 2 and distributed domestically and abroad.*

[2] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 38

PENNSYLVANIA BITUMINOUS COAL EXPORTS, 1980 – 1985

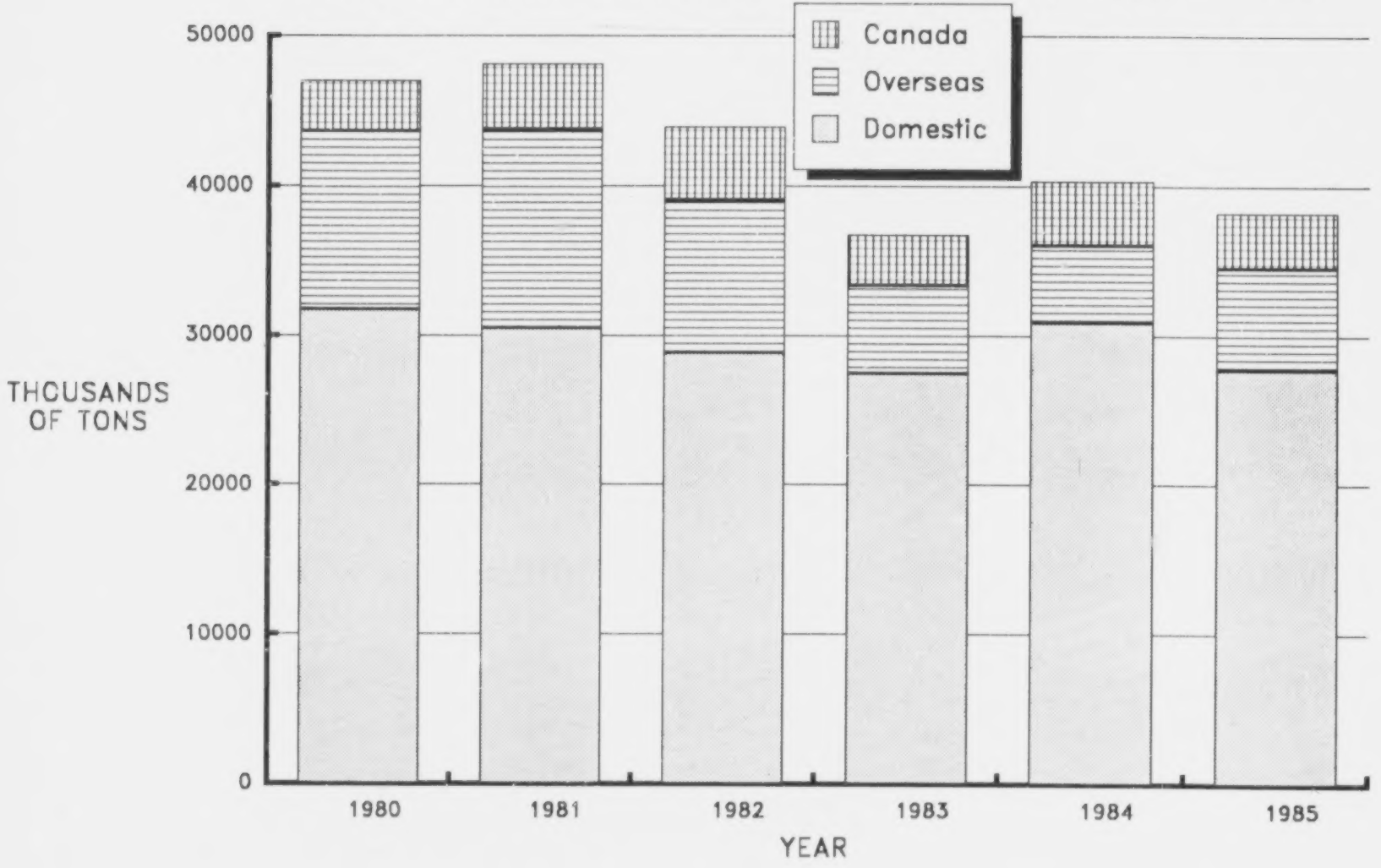


TABLE 45

U. S. BITUMINOUS COAL DISTRIBUTION TO PENNSYLVANIA[1] BY CONSUMING SECTOR
1980 - 1986
(Thousands of Tons)

Sector	1980	1981	1982	1983	1984	1985	1986[2]
Electric Utilities	40,117	37,573	39,066	37,739	42,399	38,923	30,925
Coke Plants	17,174	13,655	7,080	8,483	10,674	7,996	5,575
Other Industrial	3,796	3,637	3,070	3,462	4,651	3,323	2,533
Residential/ Commercial	416	367	581	496	467	440	351
Total	**61,503**	**55,232**	**49,797**	**50,180**	**58,191**	**50,682**	**39,384**

[1] *Figures represent all bituminous coal produced in the United States, including districts 1 and 2, and distributed to Pennsylvania for consumption.*

[2] *Figures are based on the first nine months of the year.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980-1986).

FIGURE 39

U. S. BITUMINOUS COAL DISTRIBUTION TO PENNSYLVANIA BY CONSUMING SECTOR, 1980 AND 1985

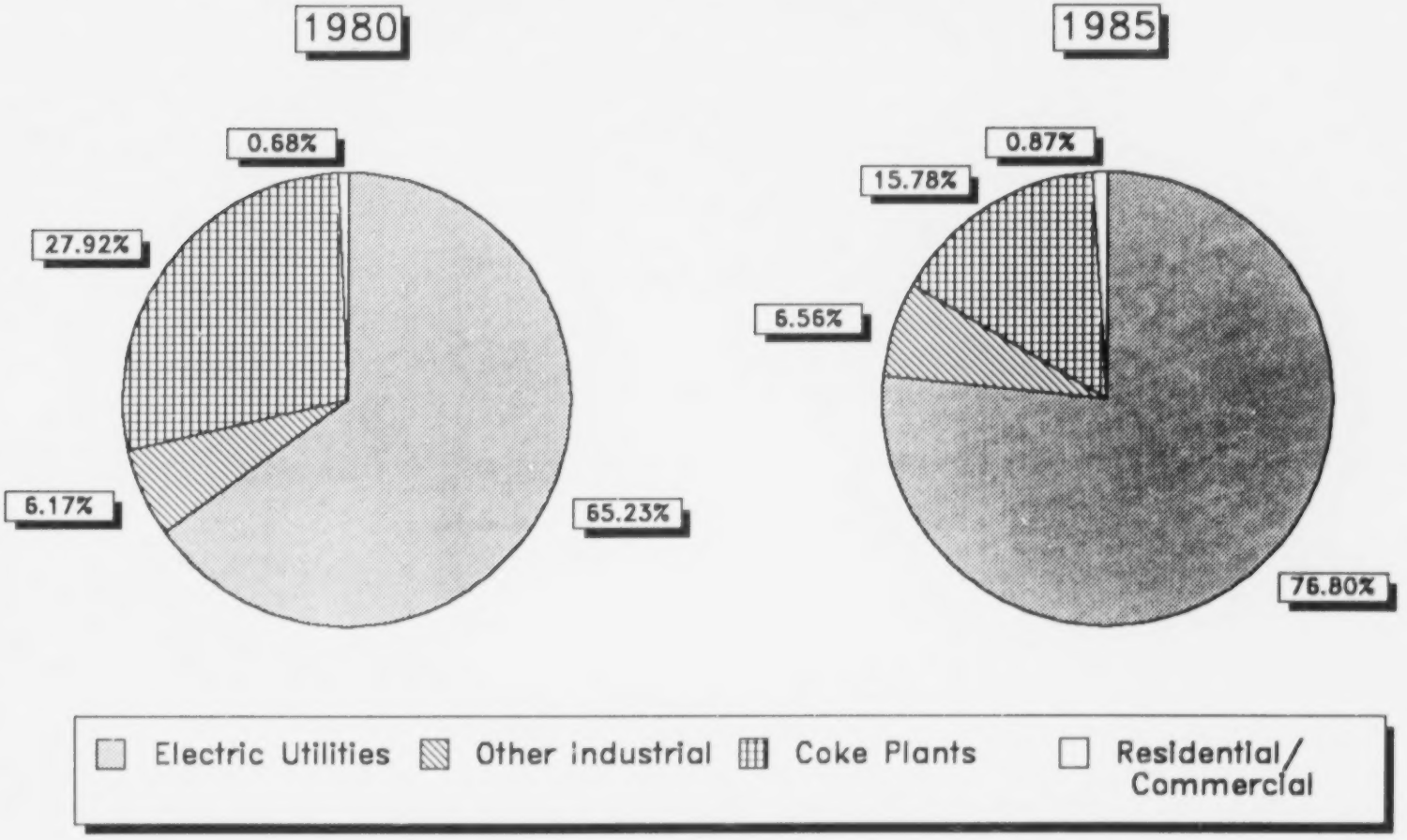


TABLE 46

PRINCIPAL DISTRIBUTION OF PENNSYLVANIA BITUMINOUS COAL[1] 1980 AND 1985

(Thousands of Tons)

	1980					1985			
	Electric Utilities	Coke Plants	Other Industrial	Residential/ Commercial		Electric Utilities	Coke Plants	Other Industrial	Residential/ Commercial
Pennsylvania	33,493	9,054	3,116	398	Pennsylvania	29,520	4,239	2,596	354
Maryland	5,226	1,449	545	25	New York	4,742	733	1,174	153
New York	5,113	1,462	1,667	132	Maryland	3,917	1,700	570	76
West Virginia	2,790	1,315	465	41	West Virginia	3,723	348	220	
Ohio	1,715	2,484	199	16	Ohio	2,800	772	310	29
Wisconsin	981		235	24	Michigan	1,170	349	62	
Michigan	953	155	370		Delaware	1,011		191	3
Delaware	842		187		Wisconsin	672		216	
New Jersey	582		1	NM	Massachusetts	509		89	12
New Hampshire	132		8	NM	Connecticut	151			NM
Massachusetts	81		10	16	Tennessee	46			
North Carolina	21				Virginia	41		35	9
Tennessee	19				Vermont	30			
North Dakota	19				New Jersey	23		11	1
Virginia	15		176	1	New Hampshire	19		1	
Minnesota	6		19		Indiana		1,057		
Indiana		1,902	5		Illinois		210	30	
Illinois		134	1		Louisiana			24	
Maine			70		North Carolina			16	
District of Columbia			5	19	Florida			14	
Alabama		4	NM		Alabama		4	NM	
Texas			3		Minnesota			10	
California			2		Oklahoma			6	NM
New Mexico			1		Missouri			4	
Kentucky			NM	1	Texas			1	
Connecticut			NM	1	California			1	NM
Oregon				5					

NM Not meaningful. Quantity is less than 500 short tons.

[1] *Figures represent bituminous coal produced in districts 1 and 2.*

Source: U.S. Department of Energy, Energy Information Administration, *Coal Distribution* (1980 and 1985).

7. ELECTRIC UTILITIES

This section presents various data on the electric utility industry in Pennsylvania, including generation, energy sales, utility consumption and stocks, existing generating capability and planned capacity additions.

Electric utilities in Pennsylvania generated 135,018 million kilowatt-hours of electricity in 1985, an increase of 3.1 percent from 1984. Over the last five years, total generation has been increasing at a compound average rate of 2.0 percent per year. Electricity generated by coal peaked in 1985 at 99,993 million kilowatt-hours. Coal, the largest contributor to total net generation, accounted for 74.1 percent of the net total in 1985. Nuclear power was the second most important fuel in the generation of electricity and accounted for 26,232 million kilowatt-hours or 19.4 percent of the total generation. Natural gas and hydro-electric power together contributed less than 1.0 percent to total generation. Petroleum's share of net generation has been gradually decreasing. In 1985, it was 7,682 million kilowatt-hours, accounting for 5.7 percent of the total.

Pennsylvania's electric utilities sold 100,117 million kilowatt-hours of electricity to their customers in 1985. Sales were 1.3 percent lower than in 1984, when total sales were 101,410 million kilowatt-hours. During 1985, sales of electricity to residential consumers decreased 1.4 percent from 1984 to 32,668 million kilowatt-hours. In 1985, residential sales accounted for 32.6 percent of total sales. Commercial consumers were sold a record 24,172 million kilowatt-hours in 1985, an increase of 2.7 percent from 1984. Commercial sales comprised 24.1 percent of the total sales to all consumers in 1985. Historically, the largest percentage of total sales has gone to industrial customers: in 1985, the percentage was 42.5 percent. Sales decreased 3.5 percent from 1984 to 42,539 million kilowatt-hours in 1985.

In 1985, electric utilities in the state consumed 41,713 thousand tons of coal, an increase of 2.1 percent from 1984. Utility coal consumption has increased at a compound annual rate of 2.4 percent over the last fifteen years. Coal remained the least expensive fossil fuel for electricity generation. The utilities' consumption of petroleum has decreased steadily every year since 1978. Steam, gas-turbine, and internal combustion plants consumed 13,045 thousand barrels of petroleum in 1985, a decrease of 18.7 percent from 1984. Electric utilities have been reducing their dependence on petroleum by displacing it with other fuels such as coal and natural gas. They also consumed 2 billion cubic feet of natural gas in 1985, a 1 billion cubic foot decrease from the year before.

For 1985, utilities reported year-end coal stocks of 13,628 thousand tons, a decrease of 15.4 percent from 1984. Petroleum stocks by the year's end were 2,724 thousand barrels, a decrease of 9.6 percent from 1984.

Installed nameplate capacity of electric utilities in Pennsylvania rose from 33,798 megawatts in 1984 to 34,521 megawatts in 1985, an increase of 2.1 percent. The total number of plants was 66. Of the four major prime movers, conventional steam represented the largest share - 23,206 megawatts or 67.2 percent of the total. Nuclear power, with 6,402 megawatts, was next with 18.5 percent of the total installed nameplate capacity.

TABLE 47

GENERATION OF ELECTRICITY IN PENNSYLVANIA BY PRIMARY ENERGY SOURCE
1970 - 1985
(Millions of Kilowatt-hours)

Year	Coal	Fuel Oil	Natural Gas	Nuclear Electric Power	Hydro-Electric Power	Total
1970	64,200	13,333	675	465	1,354	80,027
1971	72,667	13,530	721	445	772	88,135
1972	82,009	13,649	377	288	1,533	97,856
1973	91,398	10,555	177	361	1,371	103,862
1974	78,323	11,628	542	6,998	1,392	98,883
1975	83,540	7,159	83	15,869	1,575	108,226
1976	87,512	9,566	34	16,425	1,415	114,952
1977	83,719	14,054	22	17,821	1,205	116,821
1978	83,235	16,221	33	22,329	759	122,577
1979	95,555	12,066	122	18,796	1,221	127,760
1980	98,756	10,727	200	12,093	734	122,510
1981	92,059	9,377	225	14,277	659	116,597
1982	94,179	6,378	117	16,472	1,828	118,974
1983	96,380	11,204	133	14,718	1,169	123,604
1984	98,132	9,544	219	21,564	1,446	130,905
1985	99,993	7,682	140	26,232	971	135,018

Sources: Edison Electric Institute, *Statistical Year Book of the Electric Utility Industry*, (1970-1985).
U.S. Department of Energy, Energy Information Administration, *Electric Power Manual 1985*.

FIGURE 40

GENERATION OF ELECTRICITY IN PENNSYLVANIA BY PRIMARY ENERGY SOURCE, 1970 – 1985

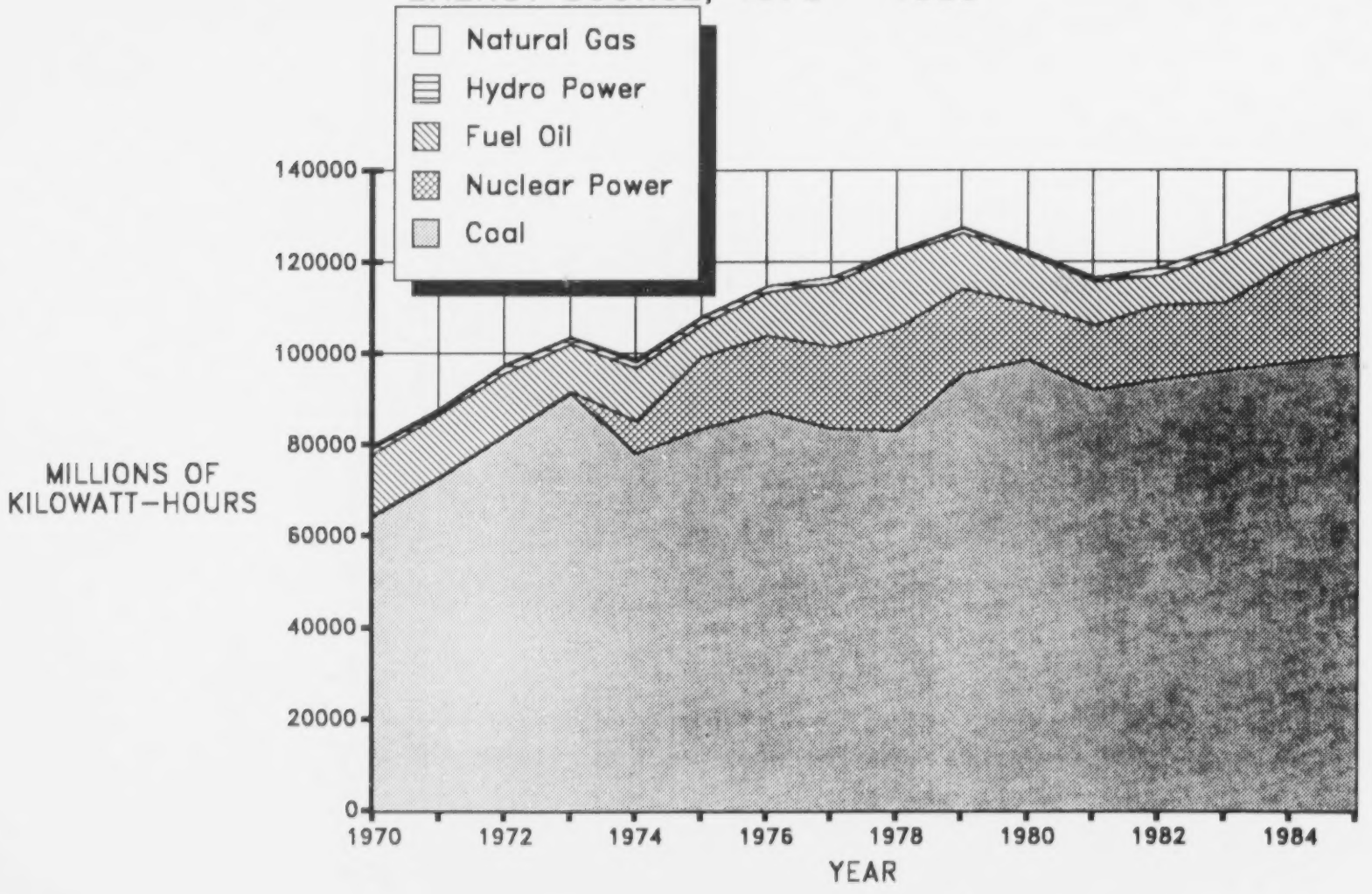


TABLE 48

ELECTRICITY SALES IN PENNSYLVANIA BY END-USE SECTOR
1960 - 1985

Year	Residential		Commercial[1]		Industrial		Transportation		Total	
	Trillion Btu	Million Kwh	Trillion Btu	Million Kwh	Trillion Btu	Million Kwh	Trillion Btu	Million Kwh	Trillion Btu	Million Kwh
1960	37.7	11,042	23.9	7,006	68.8	20,151	3.7	1,081	**134.1**	**39,280**
1961	37.6	11,021	25.3	7,404	70.0	20,515	3.6	1,067	**136.5**	**40,007**
1962	41.4	12,122	27.2	7,971	75.6	22,163	3.8	1,106	**148.0**	**43,362**
1963	43.5	12,749	28.7	8,405	81.2	23,792	3.7	1,085	**157.1**	**46,031**
1964	46.0	13,496	30.6	8,966	90.0	26,374	3.8	1,101	**170.4**	**49,937**
1965	49.6	14,535	33.0	9,682	96.7	28,343	3.7	1,075	**183.0**	**53,635**
1966	53.5	15,686	35.9	10,532	104.9	30,734	3.5	1,039	**197.8**	**57,991**
1967	58.0	17,003	37.9	11,105	107.4	31,480	3.3	978	**206.6**	**60,566**
1968	63.9	18,739	41.5	12,164	117.0	34,296	3.2	934	**225.6**	**66,133**
1969	69.8	20,467	44.8	13,121	126.9	37,201	3.2	942	**244.7**	**71,731**
1970	76.3	22,376	48.6	14,235	130.1	38,140	3.1	916	**258.1**	**75,667**
1971	80.7	23,651	52.0	15,231	132.9	38,962	3.0	877	**268.6**	**78,721**
1972	85.1	24,954	55.6	16,285	142.2	41,676	3.0	874	**285.9**	**83,789**
1973	91.1	26,713	59.7	17,503	153.9	45,118	2.9	853	**307.6**	**90,187**
1974	91.0	26,673	58.8	17,246	152.8	44,786	3.1	916	**305.7**	**89,621**
1975	94.6	27,724	61.7	18,097	141.0	41,317	3.1	915	**300.4**	**88,053**
1976	98.2	28,790	64.3	18,841	148.0	43,366	3.3	964	**313.8**	**91,961**
1977	103.5	30,346	67.4	19,758	153.0	44,855	3.5	1,029	**327.4**	**95,988**
1978	105.6	30,961	69.0	20,233	156.9	45,971	3.3	968	**334.8**	**98,133**
1979	107.6	31,546	70.1	20,546	163.5	47,911	3.1	914	**344.3**	**100,917**
1980	108.6	31,831	72.3	21,179	156.8	45,942	2.8	824	**340.5**	**99,776**
1981	107.9	31,625	74.0	21,701	159.1	46,631	2.3	670	**343.3**	**100,627**
1982	108.0	31,647	74.8	21,922	137.9	40,420	2.3	680	**323.0**	**94,669**
1983	110.5	32,383	76.8	22,497	140.1	41,055	2.3	660	**329.7**	**96,595**
1984	113.0	33,116	80.3	23,527	150.3	44,060	2.4	708	**346.0**	**101,411**
1985	111.5	32,668	82.5	24,172	145.1	42,539	2.5	739	**341.6**	**100,118**

[1] *Includes sales figures for four user sectors: commercial (small light and power), street and highway lighting, other public authorities and interdepartmental.*

Source: Edison Electric Institute, *Statistical Year Book of the Electric Utility Industry* (1960-1985).

FIGURE 41

ELECTRICITY SALES IN PENNSYLVANIA BY END-USE SECTOR FOR SELECTED YEARS

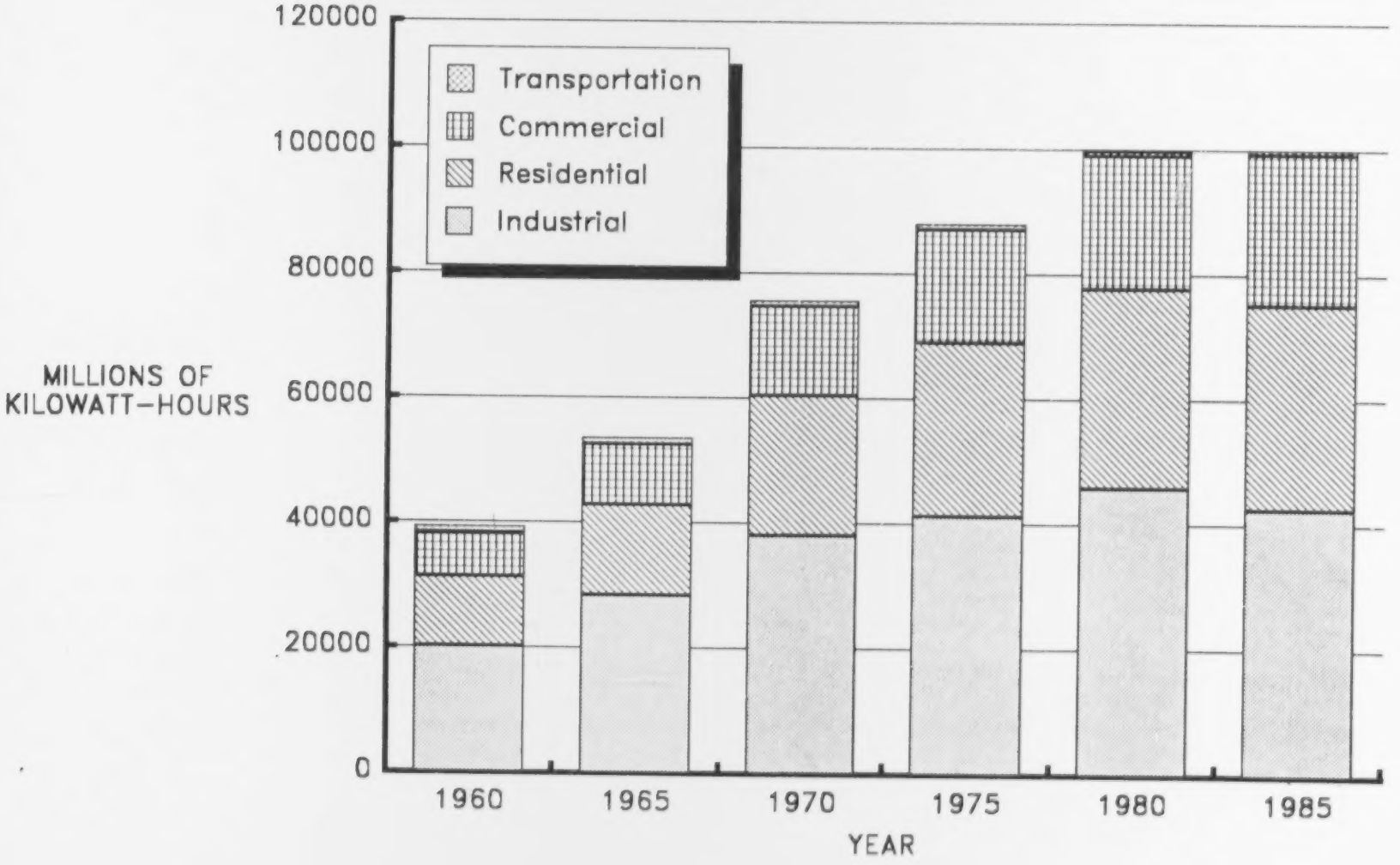


TABLE 49

PRIMARY FUEL CONSUMPTION AND YEAR-END STOCKS AT PENNYLVANIA ELECTRIC UTILITIES
1970 - 1985

Year	Coal		Petroleum						Natural Gas
			Steam		Gas Turb/Int Turb		Total[1]		
	Consumed	Stocks	Consumed	Stocks	Consumed	Stocks	Consumed	Stocks	Consumed
	(Thousands of Tons)		(Thousands of Barrels)						(Bcf)
1970	29,141	7,909	22,502	371	3,959	158	26,461	529	9
1971	32,238	7,671	22,013	404	4,276	275	26,289	679	10
1972	35,053	9,479	22,105	504	4,949	335	27,054	839	5
1973	38,794	7,392	17,686	543	3,586	501	21,272	1,044	3
1974	35,052	8,073	17,428	1,187	5,824	969	23,252	2,156	8
1975	36,659	8,756	10,273	2,428	3,419	1,022	13,692	3,450	1
1976	37,447	9,825	14,668	2,801	2,933	756	17,601	3,557	NM
1977	36,451	12,745	21,567	4,152	3,584	1,002	25,151	5,154	NM
1978	36,376	9,780	26,234	3,586	3,692	809	29,926	4,395	NM
1979	41,448	10,542	19,797	3,250	1,958	763	21,755	4,013	2
1980	42,466	11,622	17,226	3,009	2,238	673	19,464	3,682	3
1981	39,685	12,285	15,334	3,332	1,735	620	17,069	3,952	3
1982	39,972	14,092	9,949	2,988	1,442	441	11,391	3,429	2
1983	40,046	13,455	17,049	1,446	2,182	389	19,231	1,835	2
1984	40,836	16,110	13,967	2,533	2,073	481	16,040	3,014	3
1985[2]	41,713	13,628	11,349	2,380	1,696	344	13,045	2,724	2

[1] *Petroleum coke, which was not reported in the state's utility stock levels or as fuel consumed until 1978, is not included in the total.*
Stocks reported were as follows:
1978 - 154, 1979 - 149, 1980 - 30, 1981 - 28, 1982 - 36, 1983 - 52, 1984 - 42, 1985 - 45.
Consumption for the period was as follows:
1978 - 1,314, 1979 - 625, 1980 - 316, 1981 - 337, 1982 - 459, 1983 - 950, 1984 - 904.
All figures were recorded in thousands of barrels.
[2] *Preliminary.*

NM Not meaningful. The Btu value is less than 0.05, and the physical unit value is less than 0.5.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report*, April 1986. *Electric Power Annual*. Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry* (1985).

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Duquesne Light	Beaver Valley 1	Shippingport, Pa.	1977	Nuclear	385	385	(8)
	Brunot Island 1A	Pittsburgh, Pa.	1972	Oil	18	22	
	Brunot Island 1B	Pittsburgh, Pa.	1972	Oil	18	22	
	Brunot Island 1C	Pittsburgh, Pa.	1972	Oil	18	22	
	Brunot Island 2A	Pittsburgh, Pa.	1973	Oil			(2)
	Brunot Island 2B	Pittsburgh, Pa.	1973	Oil			(2)
	Brunot Island 3	Pittsburgh, Pa.	1973	Oil			(2)
	Brunot Island 4	Pittsburgh, Pa.	1974	Oil	204	240	(2)
	Cheswick	Springdale, Pa.	1970	Coal	562	570	
	Eastlake 5	Eastlake, Ohio	1972	Coal	201	202	(4)
	Elrama 1	Elrama, Pa.	1952	Coal	97	100	
	Elrama 2	Elrama, Pa.	1953	Coal	97	100	
	Elrama 3	Elrama, Pa.	1954	Coal	109	112	
	Elrama 4	Elrama, Pa.	1960	Coal	171	175	
	Fort Martin 1	Maidsville, W. Va.	1967	Coal	276	276	(3)
	Mansfield 1	Shippingport, Pa.	1976	Coal	225	228	(5)
	Mansfield 2	Shippingport, Pa.	1977	Coal	61	62	(6)
	Mansfield 3	Shippingport, Pa.	1980	Coal	109	110	(7)
	Phillips 1	South Heights, Pa.	1942	Coal			(1)
	Phillips 2	South Heights, Pa.	1949	Coal			(1)
	Phillips 3	South Heights, Pa.	1950	Coal			(1)
	Phillips 4	South Heights, Pa.	1956	Coal	325	335	(1)
	Sammis 7	Stratton, Ohio	1976	Coal	187	187	(4)
					3,063	3,148	

(1) Individual ratings limited to totals shown by flue gas scrubber capacity.
(2) Individual ratings limited to totals shown by the ability to supply steam to No. 4 steam turbine.
(3) Represents Duquesne's 50% share.
(4) Represents Duquesne's 31.2% share.
(5) Represents Duquesne's 29.3% share.
(6) Represents Duquesne's 8% share.
(7) Represents Duquesne's 13.74% share.
(8) Represents Duquesne's 47.5% share.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Metropolitan Edison	Conemaugh 1	Indiana Co. Pa.	1970	Coal	140	140	(1)
	Conemaugh 2	Indiana Co. Pa.	1971	Coal	140	140	(1)
	Conemaugh A, B, C, D	Indiana Co. Pa.	1970	Oil	2	2	(1)
	Hamilton 1	Adams Co., Pa.	1971	Oil	20	26	
	Hunterstown 1	Adams Co., Pa.	1971	Natural Gas	20	27	
	Hunterstown 2	Adams Co., Pa.	1971	Natural Gas	20	27	
	Hunterstown 3	Adams Co., Pa.	1971	Natural Gas	20	27	
	Mountain 1	Cumberland Co., Pa.	1972	Natural Gas	20	27	
	Mountain 2	Cumberland Co., Pa.	1972	Natural Gas	20	27	
	Orrtanna 1	Adams Co., Pa.	1971	Oil	20	26	
	Portland 1	Northampton Co., Pa.	1958	Coal	158	156	
	Portland 2	Northampton Co., Pa.	1962	Coal	243	243	
	Portland 3	Northampton Co., Pa.	1967	Natural Gas	15	19	
	Portland 4	Northampton Co., Pa.	1971	Natural Gas	20	26	
	Shawnee 1	Monroe Co., Pa.	1972	Oil	20	26	
	Three Mile Island 1	Dauphin Co., Pa.	1974	Nuclear	388	400	(2)
	Titus 1	Berks Co., Pa.	1951	Coal	78	80	
	Titus 2	Berks Co., Pa.	1951	Coal	78	80	
	Titus 3	Berks Co., Pa.	1953	Coal	78	80	
	Titus 4	Berks Co., Pa.	1967	Natural Gas	15	19	
	Titus 5	Berks Co., Pa.	1970	Natural Gas	16	20	
	Tolna 1	York Co., Pa.	1972	Oil	20	27	
	Tolna 2	York Co., Pa.	1972	Oil	20	27	
	York Haven 14	York Co., Pa.	1923	Hydro			(3)
	York Haven 1, 2, 3	York Co., Pa.	1930	Hydro			(3)
	York Haven 4, 5	York Co., Pa.	1929	Hydro			(3)
	York Haven 6	York Co., Pa.	1928	Hydro	19	19	(3)
	York Haven 7-13, 15-20	York Co., Pa.	1905-14	Hydro			(3)
					1,590	1,691	

(1) Represents Met-Ed's 16.45% share.
(2) Represents Met-Ed's 50% share.
(3) Total capability of York Haven is 19 MW.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Pennsylvania Electric	Benton 2	Sullivan Co., Pa.	1960	Oil	2	2	
	Benton 3	Sullivan Co., Pa.	1960	Oil	2	2	
	Blossburg 1	Blossburg, Pa.	1971	Natural Gas	19	26	
	Deep Creek 1	Oakland, Md.	1925	Hydro	9	10	
	Deep Creek 2	Oakland, Md.	1925	Hydro	9	9	
	Front Street 1	Erie, Pa.	1953	Coal			(1)
	Front Street 2	Erie, Pa.	1917	Coal			(1)
	Front Street 3	Erie, Pa.	1928	Coal			(1)
	Front Street 4	Erie, Pa.	1944	Coal	28	28	(1)
	Front Street 5	Erie, Pa.	1952	Coal	90	82	(1)
	Homer City 1	Homer City, Pa.	1969	Coal	310	310	(2)
	Homer City 2	Homer City, Pa.	1969	Coal	307	307	(2)
	Homer City 3	Homer City, Pa.	1977	Coal	325	325	(2)
	Piney 1	Clarion, Pa.	1924	Hydro	9	9	
	Piney 2	Clarion, Pa.	1924	Hydro	9	9	
	Piney 3	Clarion, Pa.	1928	Hydro	9	10	
	Seneca 1	Warren Co., Pa.	1970	Pumped Storage	35	35	
	Seneca 2	Warren Co., Pa.	1970	Pumped Storage	35	35	(3)
	Seneca 3	Warren Co., Pa.	1970	Pumped Storage	6	6	(3)
	Seward 4	Seward, Pa.	1950	Coal/Oil	60	62	(3)
	Seward 5	Seward, Pa.	1957	Coal	136	137	
	Shawville 1	Shawville, Pa.	1954	Coal	122	128	
	Shawville 2	Shawville, Pa.	1954	Coal	122	128	
	Shawville 3	Shawville, Pa.	1959	Coal	169	173	
	Shawville 4	Shawville, Pa.	1960	Coal	175	180	
	Shawville 5	Shawville, Pa.	1963	Oil	2	2	
	Shawville 6	Shawville, Pa.	1963	Oil	2	2	
	Shawville 7	Shawville, Pa.	1963	Oil	2	2	
	Three Mile Island 1	Dauphin Co., Pa.	1974	Nuclear	194	200	(4)
	Warren 1	Warren, Pa.	1948	Coal	44	44	
	Warren 2	Warren, Pa.	1949	Coal	44	44	
	Warren 3	Warren, Pa.	1979	Natural Gas/Oil	57	79	
	Wayne 1	Cochranton, Pa.	1972	Oil	54	76	
	Williamsburg 5	Williamsburg, Pa.	1944	Coal	32	33	
					2,419	2,495	

(1) Name plate ratings of 10.0, 15.0, and 50.0 MW limited to totals shown by header system steam capability.
(2) Represents Penelec's 50% share.
(3) Represents Penelec's 20% share.
(4) Represents Penelec's 25% share.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Penn Power	Beaver Valley 1	Shippingport, Pa.	1976	Nuclear	142	142	(5)
	Bruce Mansfield 1	Shippingport, Pa.	1976	Coal	33	33	(4)
	Bruce Mansfield 2	Shippingport, Pa.	1977	Coal	53	53	(4)
	Bruce Mansfield 3	Shippingport, Pa.	1980	Coal	50	50	(4)
	Edgewater CT	Lorain, Ohio	1973	Oil	7	7	(6)
	Mad River A	Springfield, Ohio	1973	Oil	5	5	(3)
	Mad River B	Springfield, Ohio	1973	Oil	5	5	(3)
	New Castle 1	West Pittsburg, Pa.	1939	Coal	35	35	
	New Castle 2	West Pittsburg, Pa.	1947	Coal	48	48	
	New Castle 3	West Pittsburg, Pa.	1952	Coal	98	98	
	New Castle 4	West Pittsburg, Pa.	1958	Coal	98	98	
	New Castle 5	West Pittsburg, Pa.	1964	Coal	137	137	
	New Castle A	West Pittsburg, Pa.	1968	Oil	1	1	(1)
	New Castle B	West Pittsburg, Pa.	1968	Oil	1	1	(1)
	Niles CT	Niles, Ohio	1972	Oil	4	4	(3)
	R. E. Burger Diesel	Shadyside, Ohio	1972	Oil	1	1	(3)
	W. H. Sammis 7	Stratton, Ohio	1971	Coal	125	125	(2)
	W. H. Sammis Diesel	Stratton, Ohio	1972	Oil	2	2	(3)
					844	844	

(1) Represents Penn Power's 40% share.
(2) Represents Penn Power's 20.8% share.
(3) Represents Penn Power's 14.4% share.
(4) Penn Power's share of Bruce Mansfield 1, 2 & 3 are 4.2%, 6.8% and 6.28%, respectively.
(5) Represents Penn Power's 17.5% share.
(6) Represents Penn Power's 14% share.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Pennsylvania Power & Light	Allentown 1	Allentown, Pa.	1967	Oil	14	18	
	Allentown 2	Allentown, Pa.	1967	Oil	14	18	
	Allentown 3	Allentown, Pa.	1967	Oil	14	18	
	Allentown 4	Allentown, Pa.	1967	Oil	14	18	
	Brunner Island 1	York Haven, Pa.	1961	Coal	321	334	
	Brunner Island 2	York Haven, Pa.	1965	Coal	378	390	
	Brunner Island 3	York Haven, Pa.	1969	Coal	730	740	
	Brunner Island D1	York Haven, Pa.	1967	Oil	3	3	
	Brunner Island D2	York Haven, Pa.	1967	Oil	3	3	
	Brunner Island D3	York Haven, Pa.	1967	Oil	3	3	
	Conemaugh 1	New Florence, Pa.	1970	Coal	97	97	(2)
	Conemaugh 2	New Florence, Pa.	1971	Coal	97	97	(2)
	Conemaugh A	New Florence, Pa.	1970	Oil	0	0	
	Conemaugh B	New Florence, Pa.	1970	Oil	0	0	
	Conemaugh C	New Florence, Pa.	1970	Oil	0	0	
	Conemaugh D	New Florence, Pa.	1970	Oil	0	0	
	Fishback 1	Pottsville, Pa.	1969	Oil	14	18	
	Fishback 2	Pottsville, Pa.	1969	Oil	14	18	
	Harrisburg 1	Harrisburg, Pa.	1967	Oil	14	18	
	Harrisburg 2	Harrisburg, Pa.	1967	Oil	14	18	
	Harrisburg 3	Harrisburg, Pa.	1967	Oil	14	18	
	Harrisburg 4	Harrisburg, Pa.	1967	Oil	14	18	
	Harwood 1	Hazleton, Pa.	1967	Oil	14	18	
	Harwood 2	Hazleton, Pa.	1967	Oil	14	18	
	Holtwood 1	Holtwood, Pa.	1910	Hydro			(4)
	Holtwood 10	Holtwood, Pa.	1924	Hydro			(4)
	Holtwood 11	Holtwood, Pa.	1910	Hydro			(4)
	Holtwood 13	Holtwood, Pa.	1910	Hydro	102	102	(4)
	Holtwood 17	Holtwood, Pa.	1954	Coal	72	73	
	Holtwood 2	Holtwood, Pa.	1911	Hydro			(4)
	Holtwood 3	Holtwood, Pa.	1911	Hydro			(4)
	Holtwood 4	Holtwood, Pa.	1911	Hydro			(4)
	Holtwood 5	Holtwood, Pa.	1911	Hydro			(4)
	Holtwood 6	Holtwood, Pa.	1912	Hydro			(4)
	Holtwood 7	Holtwood, Pa.	1913	Hydro			(4)
	Holtwood 8	Holtwood, Pa.	1914	Hydro			(4)
	Holtwood 9	Holtwood, Pa.	1924	Hydro			(4)
	Jenkins 1	Wilkes-Barre, Pa.	1969	Oil	14	18	
	Jenkins 2	Wilkes-Barre, Pa.	1969	Oil	14	18	

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Pennsylvania Power & Light	Keystone 1	Shelocta, Pa.	1967	Coal	105	105	(3)
	Keystone 2	Shelocta, Pa.	1968	Coal	105	105	(3)
	Keystone 3	Shelocta, Pa.	1968	Oil	1	1	
	Keystone 4	Shelocta, Pa.	1968	Oil	1	1	
	Keystone 5	Shelocta, Pa.	1968	Oil	1	1	
	Keystone 6	Shelocta, Pa.	1968	Oil	1	1	
	Lock Haven 1	Lock Haven, Pa.	1969	Oil	14	18	
	Martin's Creek 1	Martin's Creek, Pa.	1954	Coal	140	150	
	Martin's Creek 2	Martin's Creek, Pa.	1956	Coal	140	150	
	Martin's Creek 3	Martin's Creek, Pa.	1975	Oil	820	820	
	Martin's Creek 4	Martin's Creek, Pa.	1977	Oil	820	820	
	Martin's Creek C1	Martin's Creek, Pa.	1971	Oil	18	24	
	Martin's Creek C2	Martin's Creek, Pa.	1971	Oil	18	24	
	Martin's Creek C3	Martin's Creek, Pa.	1971	Oil	18	24	
	Martin's Creek C4	Martin's Creek, Pa.	1971	Oil	18	24	
	Martin's Creek D1	Martin's Creek, Pa.	1967	Oil	3	3	
	Martin's Creek D2	Martin's Creek, Pa.	1967	Oil	3	3	
	Montour 1	Washingtonville, Pa.	1972	Coal	740	750	
	Montour 11	Washingtonville, Pa.	1973	Oil/Coal	15	15	
	Montour 2	Washingtonville, Pa.	1973	Coal	740	750	
	Suburban 7	Scranton, Pa.	1970	Oil	20	31	
	Sunbury 1	Shamokin Dam, Pa.	1949	Coal	70	76	
	Sunbury 2	Shamokin Dam, Pa.	1949	Coal	70	76	
	Sunbury 3	Shamokin Dam, Pa.	1951	Coal	94	103	
	Sunbury 4	Shamokin Dam, Pa.	1953	Coal	128	134	
	Sunbury 5	Shamokin Dam, Pa.	1967	Oil	3	3	
	Sunbury 6	Shamokin Dam, Pa.	1967	Oil	3	3	
	Sunbury C1	Shamokin Dam, Pa.	1971	Oil	18	24	
	Sunbury C2	Shamokin Dam, Pa.	1971	Oil	18	24	
	Susquehanna 1	Berwick, Pa.	1983	Nuclear	945	945	(1)
	Susquehanna 2	Berwick, Pa.	1985	Nuclear	945	945	(1)
	Wallenpaupack 1	Hawley, Pa.	1926	Hydro	22	22	
	Wallenpaupack 2	Hawley, Pa.	1926	Hydro	22	22	
	West Shore 1	Harrisburg, Pa.	1969	Oil	14	18	
	West Shore 2	Harrisburg, Pa.	1969	Oil	14	18	
	Williamsport 1	Williamsport, Pa.	1967	Oil	14	18	
	Williamsport 2	Williamsport, Pa.	1967	Oil	14	18	
					8,134.1	8,360.1	

(1) Represents PP&L's 90% share.
(2) Represents PP&L's 11.39% share.
(3) Represents PP&L's 12.34% share.
(4) The total net capability for all Holtwood hydro units is 102 MW. Individual unit capability is dependent on river water flow, the head of the river at the hydro units and the number of hydro units operating at any time. The unit nameplate ratings are: 10.4 MW each for units 9 & 10 and 0.5 MW each for units 11 & 13.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Philadelphia Electric	Chester 7	Chester, Pa.	1969	Oil	13	18	
	Chester 8	Chester, Pa.	1969	Oil	13	18	
	Chester 9	Chester, Pa.	1969	Oil	13	18	
	Conemaugh 1	Indiana Co., Pa.	1970	Coal	176	176	(1)
	Conemaugh 2	Indiana Co., Pa.	1971	Coal	176	176	(1)
	Conemaugh D	Indiana Co., Pa.	1970	Oil	2	2	(1)
	Conowingo 1	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 10	Conowingo, Md.	1964	Hydro	65	65	(2)
	Conowingo 11	Conowingo, Md.	1964	Hydro	65	65	(2)
	Conowingo 2	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 3	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 4	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 5	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 6	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 7	Conowingo, Md.	1928	Hydro	36	36	(2)
	Conowingo 8	Conowingo, Md.	1928	Hydro	65	65	(2)
	Conowingo 9	Conowingo, Md.	1964	Hydro	65	65	(2)
	Cromby 1	Phoenixville, Pa.	1954	Coal	144	147	
	Cromby 2	Phoenixville, Pa.	1955	Oil	201	211	
	Cromby D	Phoenixville, Pa.	1967	Oil	3	3	
	Croydon 11	Croydon, Pa.	1974	Oil	39	53	
	Croydon 12	Croydon, Pa.	1974	Oil	39	53	
	Croydon 21	Croydon, Pa.	1974	Oil	45	59	
	Croydon 22	Croydon, Pa.	1974	Oil	34	48	
	Croydon 31	Croydon, Pa.	1974	Oil	39	53	
	Croydon 32	Croydon, Pa.	1974	Oil	45	59	
	Croydon 41	Croydon, Pa.	1974	Oil	39	53	
	Croydon 42	Croydon, Pa.	1974	Oil	45	59	
	Delaware 10	Philadelphia, Pa.	1969	Oil	13	18	
	Delaware 11	Philadelphia, Pa.	1969	Oil	13	18	
	Delaware 12	Philadelphia, Pa.	1969	Oil	13	18	
	Delaware 7	Philadelphia, Pa.	1953	Oil	126	128	
	Delaware 8	Philadelphia, Pa.	1953	Oil	124	128	

(1) Represents PE's 20.72% share.

(2) Rating of Conowingo is limited to 410 MW in the summer season due to required water releases.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Philadelphia Electric	Delaware 9	Philadelphia, Pa.	1970	Oil	15	20	
	Delaware D	Philadelphia, Pa.	1967	Oil	3	3	
	Eddystone 1	Eddystone, Pa.	1960	Coal	311	319	
	Eddystone 10	Eddystone, Pa.	1967	Oil	13	18	
	Eddystone 2	Eddystone, Pa.	1960	Coal	324	333	
	Eddystone 20	Eddystone, Pa.	1967	Oil	13	18	
	Eddystone 3	Eddystone, Pa.	1974	Oil	380	380	
	Eddystone 30	Eddystone, Pa.	1970	Oil	15	20	
	Eddystone 4	Eddystone, Pa.	1976	Oil	380	380	
	Eddystone 40	Eddystone, Pa.	1970	Oil	15	20	
	Falls 1	Falls Twp., Pa.	1970	Oil	15	20	
	Falls 2	Falls Twp., Pa.	1970	Oil	15	20	
	Falls 3	Falls Twp., Pa.	1970	Oil	15	20	
	Keystone 1	Armstrong Co., Pa.	1967	Coal	179	179	(3)
	Keystone 2	Armstrong Co., Pa.	1968	Coal	178	178	(3)
	Keystone D	Armstrong Co., Pa.	1968	Oil	2	2	(3)
	Moser 1	Pottstown, Pa.	1970	Oil	15	20	
	Moser 2	Pottstown, Pa.	1970	Oil	15	20	
	Moser 3	Pottstown, Pa.	1970	Oil	15	20	
	Muddy Run 1	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 2	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 3	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 4	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 5	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 6	Drumore Twp., Pa.	1967	Pumped Storage	110	110	
	Muddy Run 7	Drumore Twp., Pa.	1968	Pumped Storage	110	110	
	Muddy Run 8	Drumore Twp., Pa.	1968	Pumped Storage	110	110	
	Peach Bottom 2	Peach Bottom, Pa.	1974	Nuclear	447	449	(4)
	Peach Bottom 3	Peach Bottom, Pa.	1974	Nuclear	439	439	(4)
	Plymouth Meeting 15	Plymouth Meeting, Pa.	1971	Oil	29	39	
	Plymouth Meeting 9	Plymouth Meeting, Pa	1971	Oil	29	39	
	Richmond 21	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 22	Philadelphia, Pa.	1971	Oil	30	39	

(3) Represents PE's 20.99% share.
(4) Represents PE's 42.49% share.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
Philadelphia Electric	Richmond 31	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 32	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 41	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 42	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 43	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 44	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 51	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 52	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 61	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 62	Philadelphia, Pa.	1971	Oil	30	39	
	Richmond 71	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 72	Philadelphia, Pa.	1971	Oil	20	29	
	Richmond 73	Philadelphia, Pa.	1970	Oil	20	29	
	Richmond 74	Philadelphia, Pa.	1970	Oil	20	29	
	Richmond 81	Philadelphia, Pa.	1973	Oil	48	66	
	Richmond 91	Philadelphia, Pa.	1973	Oil	48	66	
	Richmond 92	Philadelphia, Pa.	1973	Oil	48	66	
	Richmond D	Philadelphia, Pa.	1967	Oil	3	3	
	Salem 1	Salem, N.J.	1977	Nuclear	459	468	(5)
	Salem 2	Salem, N.J.	1981	Nuclear	471	477	(5)
	Salem 3	Salem, N.J.	1971	Oil	16	20	(5)
	Schuylkill 1	Philadelphia, Pa.	1958	Oil	166	175	
	Schuylkill 10	Philadelphia, Pa.	1969	Oil	13	18	
	Schuylkill 11	Philadelphia, Pa.	1971	Oil	15	20	
	Schuylkill 3	Philadelphia, Pa.	1916	Oil	12	54	
	Schuylkill D	Philadelphia, Pa.	1967	Oil	3	3	
	Southwark 1	Philadelphia, Pa.	1947	Oil	163	173	
	Southwark 2	Philadelphia, Pa.	1948	Oil	173	183	
	Southwark 3	Philadelphia, Pa.	1967	Oil	13	18	
	Southwark 4	Philadelphia, Pa.	1967	Oil	13	18	
	Southwark 5	Philadelphia, Pa.	1967	Oil	13	18	
	Southwark 6	Philadelphia, Pa.	1968	Oil	13	18	
	Southwark D	Philadelphia, Pa.	1967	Oil	3	3	
					7,701	8,274	(6)

(5) Represents PE's 42.59% share.
(6) Sum of individual unit capabilities.

TABLE 50

PENNSYLVANIA ELECTRIC UTILITIES EXISTING GENERATING CAPABILITY, JANUARY 1, 1986

Company	Station & Unit No.	Location	Date Installed	Fuel Type	Net Capability - MW Summer	Net Capability - MW Winter	Notes
West Penn	Armstrong 1	Reedsdale, Pa.	1953	Coal	176	180	
	Armstrong 2	Reedsdale, Pa.	1959	Coal	175	180	
	Fort Martin 2	Maidsville, W. Va.	1968	Coal	278	278	(2)
	Harrison 1	Haywood, W. Va.	1972	Coal	270	270	(4)
	Harrison 2	Haywood, W. Va.	1973	Coal	270	270	(4)
	Harrison 3	Haywood, W. Va.	1974	Coal	245	245	(4)
	Hatfield 1	Masontown, Pa.	1969	Coal	263	291	(3)
	Hatfield 2	Masontown, Pa.	1970	Coal	263	291	(3)
	Hatfield 3	Masontown, Pa.	1971	Coal	263	289	(3)
	Lake Lynn 1	Lake Lynn, W. Va.	1926	Hydro	13	13	
	Lake Lynn 2	Lake Lynn, W. Va.	1926	Hydro	13	13	
	Lake Lynn 3	Lake Lynn, W. Va.	1926	Hydro	13	13	
	Lake Lynn 4	Lake Lynn, W. Va.	1926	Hydro	13	13	
	Mitchell 1	Courtney, Pa.	1948	Oil	77	77	(1)
	Mitchell 2	Courtney, Pa.	1949	Oil	77	77	(1)
	Mitchell 3	Courtney, Pa.	1963	Coal	275	284	
	Pleasants 1	Willow Island, W. Va.	1979	Coal	276	280	(5)
	Pleasants 2	Willow Island, W. Va.	1980	Coal	276	280	(5)
	Springdale 7	Springdale, Pa.	1945	Oil	85	86	(1)
	Springdale 8	Springdale, Pa.	1954	Oil	121	121	(1)
					3,442	3,553	

(1) Units are in deactivated shutdown status (cold reserve). Mitchell 1 and 2 are expected to return to service in March 1992 and Springdale 7 and 8 in March 1993.
(2) Represents West Penn's 50% share.
(3) Represents West Penn's 52.5% share.
(4) Represents West Penn's 12.24% share.
(5) Represents West Penn's 5% share.

Note: Several numbers have been rounded for display purposes, not for calculation purposes.

Source: Pennsylvania Public Utility Commission, Division of Conservation and Load Analysis, Bureau of Conservation, Economics and Energy Planning, *Electric Power Outlook for Pennsylvania 1986*, June 1986.

TABLE 51

PENNSYLVANIA ELECTRIC UTILITIES PLANNED CAPACITY ADDITIONS

Company	Station	Effective Date	Fuel Type	Nameplate Capacity	Pa Company Share	Status[1]
				(MW)	(MW)	
PECo	Limerick 1	Feb-86	Nuclear	1,055	1,055	V/O
PP&L	Safe Harbor 9	Feb-86	Hydro	38	13	V/J
PP&L	Safe Harbor 11	Feb-86	Hydro	38	13	V/J
Duquesne Light	Perry 1	Feb-87	Nuclear	1,205	165	V/J
Penn Power	Perry 1	Feb-87	Nuclear	1,205	63	V/J
Duquesne Light	Beaver Valley 2	Dec-87	Nuclear	833	114	V/J
AEC	Raystown 1-3	Mar-88	Hydro	2	2	T
PECo	Limerick 2	Oct-90	Nuclear	1,055	1,055	U
Duquesne Light	Perry 2	NA	Nuclear	1,205	165	U/R/J
Penn Power	Perry 2	NA	Nuclear	1,205	63	U/R/J
Met Ed	Future 1	May-95	Coal	300	90	P/J
Penelec	Future 1	May-95	Coal	300	30	P/J
West Penn	Coal 1	Oct-95	Coal	300	159	P/J
West Penn	Coal 2	Oct-97	Coal	300	159	P/J
Duquesne Light	Unnamed	May-2000	Coal	300	300	N
Met Ed	Future 2	May-2001	Coal	625	188	P/J
Penelec	Future 2	May-2001	Coal	625	62	P/J
Met Ed	Future 3	May-2004	Coal	625	188	P/J
Penelec	Future 3	May-2004	Coal	625	62	P/J
Duquesne Light	Unnamed	May-2005	Coal	300	300	N

[1] *Explanation of Symbols:*
P - Planned for installation but not (utility) authorized.
T - Regulatory approval received but not under construction.
U - Under construction, less than 50% of plant completed.
V - Under construction, greater than 50% of plant completed.
O - Limerick 1 was placed in commercial operation on February 1, 1986.
J - Jointly owned unit.
R - The status of Perry 2 is currently under review for CAPCO. Duquesne has applied for de facto abandonment.
N - Not planned and not committed.

NA Not available.

Source: Pennsylvania Public Utility Commission, Division of Conservation & Load Analysis, Bureau of Conservation, Economics & Energy Planning, *Electric Power Outlook for Pennsylvania 1986*, June 1986.

TABLE 52

INSTALLED NAMEPLATE CAPACITY OF ELECTRIC UTILITIES IN PENNSYLVANIA BY PRIME MOVER
1970 - 1985

Year	Steam		Hydro-Electric Power		Nuclear Power		Combustion Turbine/ Internal Combustion		Total	
	Number of Prime Movers	Capacity (MW)	Number of Prime Movers	Capacity (MW)	Number of Prime Movers	Capacity (MW)	Number of Prime Movers	Capacity (MW)	Number of Plants[1]	Capacity (MW)
1970	43	16,680	10	1,653	3	156	45	1,068	71	19,557
1971	43	17,206	10	1,653	3	156	52	1,942	75	20,957
1972	42	18,711	9	1,651	3	156	57	2,182	78	22,700
1973	41	19,326	8	1,651	3	156	58	2,638	78	23,771
1974	39	19,183	8	1,651	4	3,321	56	3,166	76	27,321
1975	38	19,629	8	1,651	3	3,275	55	3,162	74	27,717
1976	36	20,817	8	1,651	4	4,163	55	3,306	73	29,937
1977	35	23,080	8	1,651	4	4,198	53	3,314	70	32,243
1978	35	23,160	8	1,651	4	5,159	53	3,310	70	33,280
1979	35	23,337	8	1,651	4	5,159	53	3,314	70	33,461
1980	35	24,251	8	1,651	4	5,159	53	3,314	70	34,375
1981	35	24,251	8	1,651	4	5,159	53	3,314	70	34,375
1982	33	23,727	7	1,649	3	5,059	49	3,239	68	33,674
1983	33	23,727	7	1,649	4	6,211	49	3,239	69	34,826
1984	32	23,681	7	1,649	4	5,250	48	3,218	67	33,798
1985	31	23,206	7	1,761	4	6,402	48	3,152	66	34,521

[1] *The sum total number of plants may not equal the sum of the prime movers because there may be more than one prime mover for each plant.*

Sources: U.S. Department of Energy, Energy Information Administration, *Electric Power Annual: Inventory of Power Plants in the United States 1985*, August 1986.
Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry* (1985).

8. NUCLEAR

This section presents current and projected electricity generation by nuclear power plants in Pennsylvania.

In 1985, Pennsylvania's nuclear generating units produced a total of 26,232 million kilowatt-hours of electricity. Half of that electricity (12,814 million kilowatt-hours) was generated by Pennsylvania Power and Light's Susquehanna unit. The second largest contributor was Duquesne Light's Beaver Valley, which produced 5,990 million kilowatt-hours.

According to the Bureau of Conservation, Economics and Energy Planning, of the Pennsylvania Public Utility Commission, electricity generated by nuclear power in Pennsylvania is projected to rise from 25,541 million kilowatt-hours in 1985 to 40,861 million kilowatt-hours in 1995, an increase of 60.0 percent. In 1985, Pennsylvania Power and Light had the largest share of the total, 11,534 million kilowatt-hours or 45.2 percent. By 1995, Philadelphia Electric is projected to take the lead with 21,309 million kilowatt-hours or 52.1 percent of the total.

TABLE 53

ELECTRICITY GENERATED BY NUCLEAR POWER PLANTS IN PENNSYLVANIA
1985
(Millions of Kilowatt-hours)

Month	Duquesne Light Beaver Valley	Metropolitan Edison TMI	Pennsylvania Power & Light Susquehanna	Philadelphia Electric Limerick	Philadelphia Electric Peach Bottom	Total
January	369	(8)	995	0	658	2,014
February	459	(7)	795	0	3	1,250
March	478	(9)	630	0	636	1,735
April	466	(12)	637	0	637	1,728
May	480	(7)	616	0	619	1,708
June	580	(23)	975	0	503	2,035
July	553	(29)	1,323	0	410	2,257
August	552	(29)	1,448	35	379	2,385
September	491	(28)	1,460	114	449	2,486
October	443	86	1,404	242	622	2,797
November	508	286	1,283	283	699	3,059
December	611	432	1,248	487	(1)	2,777
Total	5,990	652	12,814	1,161	5,614	26,231

Note: Parentheses denote negative numbers.

Source: U.S. Department of Energy, Energy Information Administration, *Electric Power Quarterly*, 1985.

TABLE 54

PROJECTED NUCLEAR-BASED ELECTRICITY GENERATION IN PENNSYLVANIA BY UTILITY
1985 - 1995
(Millions of Kilowatt-hours)

Utility	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Duquesne Light	2,855	2,340	3,186	4,228	4,070	3,748	4,367	4,082	3,921	4,442	4,126
Metropolitan Edison	326	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080
Penelec	163	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040
Penn Power	1,050	1,220	1,220	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
P P & L	11,534	9,583	11,671	12,005	10,705	11,974	11,968	10,739	11,975	11,970	10,706
PECo	9,613	15,976	13,482	17,421	15,905	18,865	23,414	21,174	21,316	24,337	21,309
Total	**25,541**	**32,239**	**32,679**	**38,374**	**35,400**	**39,307**	**44,469**	**40,715**	**41,932**	**45,469**	**40,861**

Source: Pennsylvania Public Utility Commission, Bureau of Conservation, Economics and Energy Planning, *Electric Power Outlook for Pennsylvania 1986*, June 1986.

9. PRICES

This section provides the average annual costs of major fuels for the residential, commercial and industrial sectors since 1970. Unless otherwise noted, prices are reported in both current and constant (1972) dollars. Electric utilities annual average costs for oil, gas and coal are shown as is a comparison of the refiner acquisition cost of crude oil.

The average price of home heating oil sold to Pennsylvania residential customers in 1986 was almost 80 cents per gallon, nearly 23 cents below the average of the previous year.

The 1986 average price of leaded regular gasoline, self-service, was 83 cents per gallon in Philadelphia and 83.6 cents per gallon in Pittsburgh, an average of 26.5 cents lower than the previous year. The decrease in full-service prices for leaded regular was slightly smaller. The average price dropped 22 cents to 107.8 cents per gallon in Philadelphia and 102.4 cents per gallon in Pittsburgh. For unleaded regular, self-service, the average price in 1986 was 86.3 cents per gallon in Philadelphia and 86.6 cents per gallon in Pittsburgh, a decrease of 30 cents per gallon from 1985. Full-service prices decreased 23 cents in Philadelphia to 112.3 cents per gallon and decreased 25 cents in Pittsburgh to 106.6 cents per gallon.

The average price of natural gas used by residential customers in 1985 was $6.63 per thousand cubic feet, up slightly from 1984. The average price of natural gas used by commercial consumers rose 4.4 percent to $6.45 per thousand cubic feet. Industrial users paid $5.22 per thousand cubic feet, an increase of 3.8 percent over 1984.

The average retail price of electricity to residential customers in 1985 was 8.54 cents per kilowatt-hour, 1.3 percent above the average price of the previous year. The price of electricity to commercial consumers averaged 7.79 cents per kilowatt-hour, 1.5 percent lower than in 1984. Industrial users paid an average of 5.92 cents per kilowatt-hour, an increase of 2.1 percent.

The average cost of all fuels to electric utilities was down between 1984 and 1985. The largest decrease occurred in the cost for natural gas, which fell 9.9 percent to $4.27 per million Btu. The average cost of oil was $4.60 per million Btu, a decrease of 7.1 percent. The average cost of coal at electric utilities was $1.67 per million Btu, 3.5 percent below the previous year.

Refiner acquisition costs for crude oil continued to fall from the peak levels reached in 1981. The 1985 cost of $26.75 per barrel averaged $1.88 less than in 1984 and $8.49 lower than the peak year of 1981. Domestic acquisition costs dropped $1.87 from 1984 to $26.66 per barrel in 1985. These costs followed the same pattern as imported acquisition costs, which averaged $1.89 less than the previous year. The 1985 price of $26.99 per barrel was down over $10 from the 1981 price of $37.05 per barrel.

TABLE 55

PENNSYLVANIA NO. 2 HEATING OIL PRICES BY ECONOMIC SECTOR
1970 - 1986
(Cents per Gallon)

	Current Dollars[1]			Constant Dollars[2]		
Year	Residential	Commercial[3]	Industrial[3]	Residential	Commercial	Industrial
1970	18.72	15.21	9.85	20.17	16.39	10.61
1971	19.97	16.09	10.40	20.63	16.62	10.74
1972	20.11	16.09	10.26	20.11	16.09	10.26
1973	23.16	18.45	11.79	21.81	17.37	11.10
1974	36.34	31.76	30.10	30.82	26.94	25.53
1975	38.97	34.40	33.01	30.28	26.73	25.65
1976	40.64	36.20	33.42	29.86	26.60	24.56
1977	46.05	41.75	38.69	31.78	28.81	26.70
1978	48.82	43.83	39.53	31.31	28.11	25.36
1979	69.76	63.38	52.98	40.21	36.53	30.54
1980	96.39	88.76	78.64	48.93	45.06	39.92
1981	118.03	111.23	91.67	54.29	51.16	42.17
1982	113.73	106.24	95.28	49.30	46.05	41.30
1983	106.65	95.42	87.38	44.79	40.08	36.70
1984	108.87	90.98	88.90	43.85	36.64	35.80
1985	102.92	95.84	82.94	40.03	37.28	32.26
1986	79.52	68.33	61.00	30.14	25.90	23.12

[1] *Current dollar figures were derived by converting the prices in dollars per million Btu, as they were reported in the* State Energy Price and Expenditure Data System, *to cents per gallon. The conversion factor used for distillate fuel oil prices was 5.825 million Btu per barrel.*

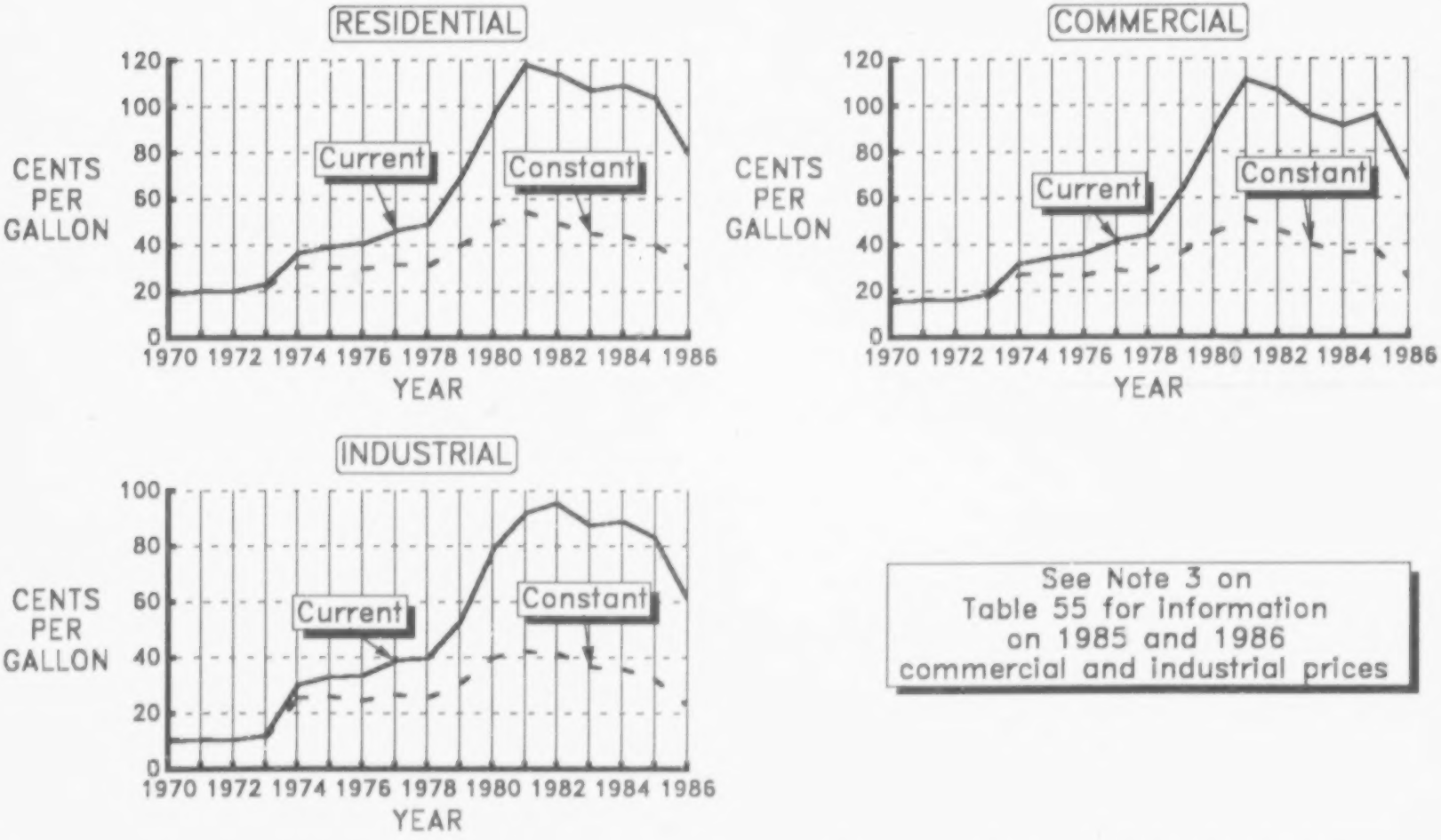
[2] *Constant dollar values were calculated using the Consumer Price Index (CPI)(1972 = 100). See Table 66 for the CPI figures.*

[3] *Commercial and industrial prices for 1985 and 1986 are for the Philadelphia area as reported in the* Energy User News.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987, (1970–1984).
Pennsylvania Energy Office, Heating Oil Survey (1985 and 1986).
Energy User News (1985 and 1986).

FIGURE 42

PENNSYLVANIA NO. 2 HEATING OIL PRICES BY ECONOMIC SECTOR, 1970 – 1986



See Note 3 on Table 55 for information on 1985 and 1986 commercial and industrial prices

TABLE 56

PENNSYLVANIA REGULAR UNLEADED MOTOR GASOLINE PRICES[1] BY MONTH
1979 - 1986
(Cents per Gallon)

	Full Service							
Month	1979	1980	1981	1982	1983	1984	1985	1986
January	70.64	117.55	132.53	141.19	129.39	130.11	127.73	136.45
February	72.55	124.10	141.37	138.86	124.39	129.12	127.24	132.25
March	74.43	127.90	142.66	133.09	118.82	128.92	128.42	114.88
April	80.44	128.34	140.58	127.91	123.86	130.19	131.08	101.86
May	84.97	128.65	139.81	126.75	125.73	130.51	135.06	108.88
June	92.12	128.41	142.05	129.50	126.55	130.35	135.83	110.00
July	98.04	128.29	141.73	133.03	128.69	129.55	136.94	102.01
August	101.39	128.22	141.32	132.89	131.60	129.35	136.86	102.01
September	103.38	126.94	141.13	132.14	132.01	129.35	136.91	102.25
October	104.39	126.47	141.13	131.18	132.33	129.36	136.92	100.92
November	105.54	126.72	141.75	131.63	131.90	129.00	136.97	100.46
December	109.94	127.98	141.67	131.12	131.15	128.76	137.03	101.09
Annual Average	**91.49**	**126.63**	**140.64**	**132.44**	**128.04**	**129.55**	**133.92**	**109.42**

	Self Service			
Month	1983	1984	1985	1986
January	NA	116.78	111.35	116.88
February	NA	114.86	110.93	111.16
March	NA	114.42	112.27	
April	NA	115.53	116.39	78.34
May	NA	115.78	118.12	87.64
June	114.84	115.51	118.93	88.77
July	117.21	114.15	119.47	78.10
August	120.51	113.87	119.17	78.10
September	121.03	114.27	118.62	78.51
October	120.71	114.27	118.34	76.50
November	120.08	113.48	118.46	75.82
December	118.51	112.72	118.33	76.14
Annual Average	**118.98**	**114.64**	**116.70**	**86.45**

[1] *These prices are an average of prices reported for the Philadelphia and Pittsburgh areas.*

NA Not available.

Source: *Lundberg Letter* (1979-1986).

FIGURE 43

PENNSYLVANIA REGULAR UNLEADED MOTOR GASOLINE PRICES, 1979 – 1986

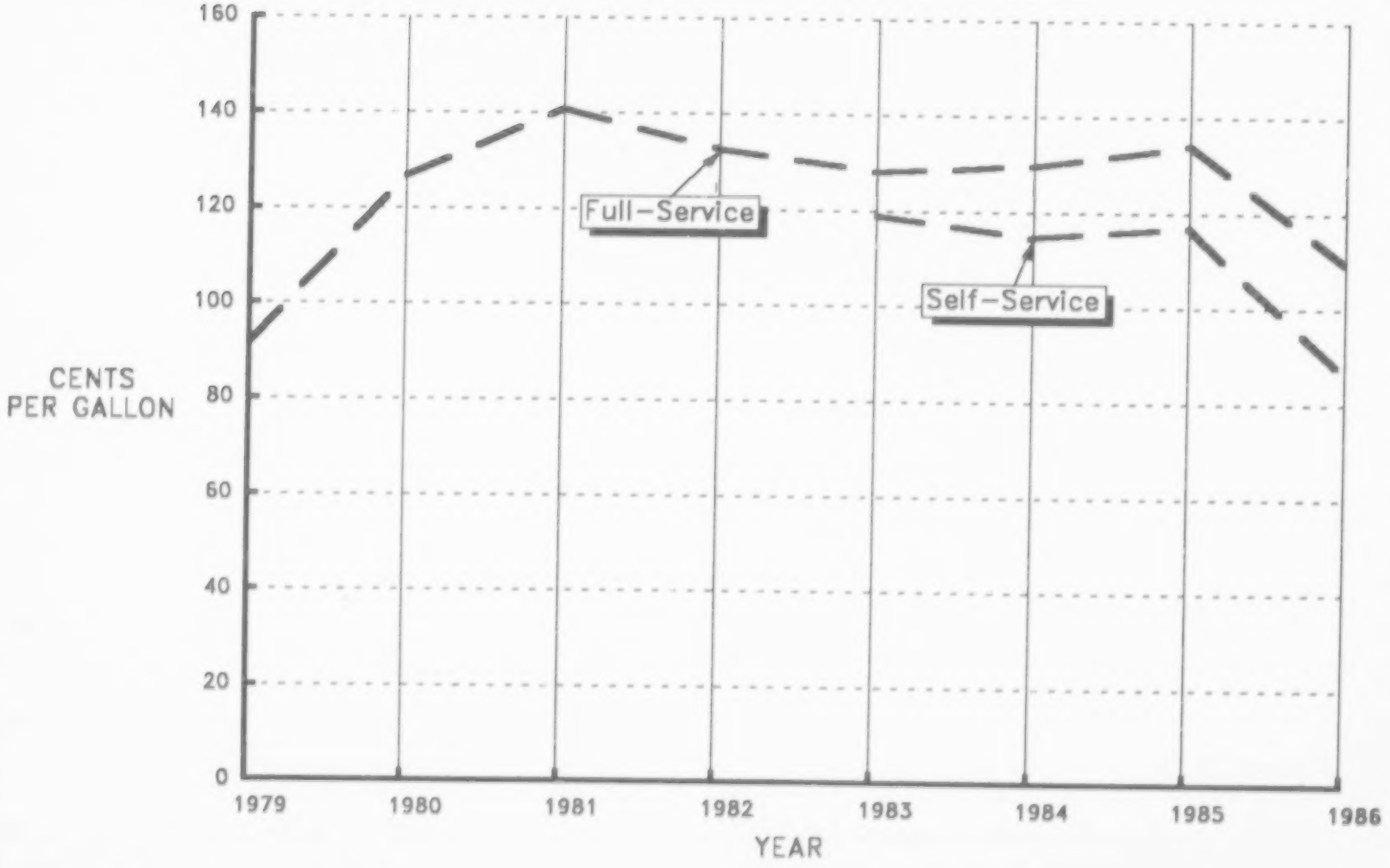


TABLE 57

PENNSYLVANIA MOTOR GASOLINE PRICES
1960 - 1986
(Cents per Gallon)

	Full-Service							
	Current Dollars				Constant Dollars[1]			
	Regular Leaded Gasoline		Regular Unleaded Gasoline		Regular Leaded Gasoline		Regular Unleaded Gasoline	
Year	Philadelphia	Pittsburgh	Philadelphia	Pittsburgh	Philadelphia	Pittsburgh	Philadelphia	Pittsburgh
1960	28.48	NA	NA	NA	40.23	NA	NA	NA
1970	36.48	NA	NA	NA	39.31	NA	NA	NA
1971	37.23	NA	NA	NA	38.46	NA	NA	NA
1972	36.74	NA	NA	NA	36.74	NA	NA	NA
1973	37.90	NA	NA	NA	35.69	NA	NA	NA
1974	52.88	NA	NA	NA	44.85	NA	NA	NA
1975	53.90	NA	NA	NA	41.88	NA	NA	NA
1976	56.73	NA	NA	NA	41.68	NA	NA	NA
1977	61.40	NA	NA	NA	42.37	NA	NA	NA
1978	61.80	62.80	65.80	66.30	39.64	40.28	42.21	42.53
1979	87.49	87.63	91.76	91.54	50.43	50.51	52.89	52.76
1980	122.86	122.36	126.79	126.47	62.37	62.11	64.36	64.20
1981	137.03	135.05	141.56	139.85	63.03	62.12	65.11	64.33
1982	129.59	124.94	135.07	130.34	56.17	54.16	58.55	56.50
1983	122.89	121.25	128.72	127.35	51.61	50.92	54.06	53.49
1984	123.33	123.90	128.65	130.44	49.67	49.90	51.81	52.53
1985	128.84	125.41	135.31	132.17	50.11	48.78	52.63	51.41
1986	107.79	102.36	112.29	106.55	40.86	38.80	42.57	40.39
	Self-Service							
1983	112.28	113.69	117.85	120.11	47.16	47.75	49.50	50.45
1984	106.02	110.58	112.17	117.10	42.70	44.53	45.18	47.16
1985	109.05	111.03	115.30	117.69	42.42	43.19	44.85	45.78
1986	83.04	83.61	86.32	86.57	31.48	31.69	32.72	32.82

[1] *Constant dollar values were calculated using the Consumer Price Index (CPI)(1972 = 100). See Table 66 for the CPI figures.*

NA Not available.

Sources: U.S. Department of Labor, Bureau of Labor Statistics (1960-1978)
Lundberg Letter (1979-1986).

FIGURE 44

PENNSYLVANIA MOTOR GASOLINE PRICES IN CURRENT DOLLARS, 1978 – 1986

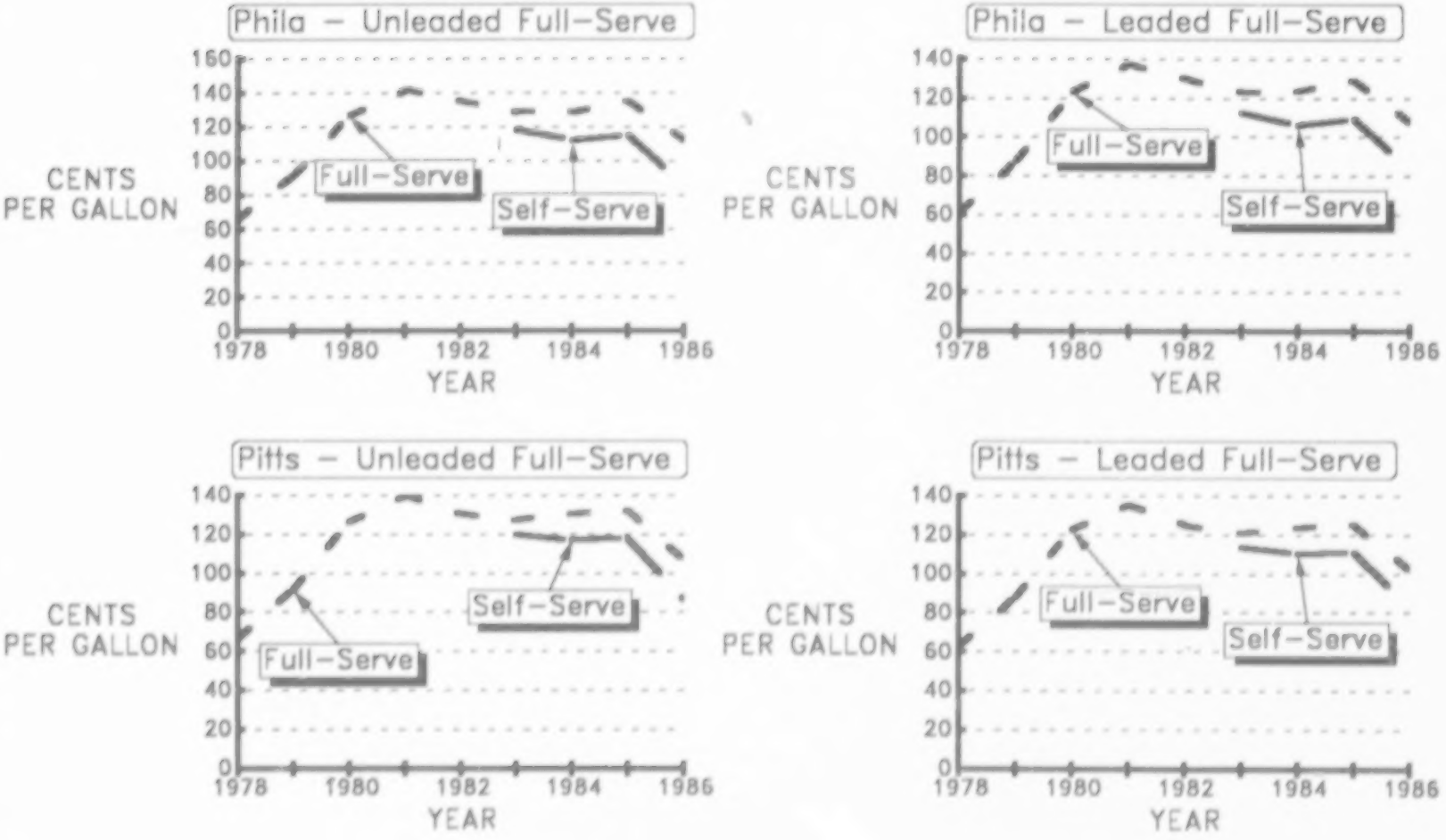


TABLE 58

PENNSYLVANIA NATURAL GAS PRICES BY ECONOMIC SECTOR
1970 - 1986
(Dollars per Mcf)

	Current Dollars[1]				Constant Dollars[2]			
Year	Residential	Commercial	Industrial	Electric Generation	Residential	Commercial	Industrial	Electric Generation
1970	1.24	0.96	0.59	0.42	1.34	1.03	0.64	0.45
1971	1.28	1.00	0.65	0.49	1.32	1.03	0.67	0.51
1972	1.35	1.08	0.72	0.49	1.35	1.08	0.72	0.49
1973	1.46	1.13	0.75	0.57	1.37	1.06	0.71	0.54
1974	1.66	1.28	0.94	1.58	1.41	1.09	0.80	1.34
1975	1.93	1.71	1.09	1.50	1.50	1.33	0.85	1.17
1976	2.13	1.71	1.35	1.66	1.57	1.26	0.99	1.22
1977	2.50	2.31	1.92	2.11	1.73	1.59	1.33	1.46
1978	2.63	2.38	2.02	2.58	1.69	1.53	1.30	1.65
1979	3.20	2.95	2.50	3.06	1.84	1.70	1.44	1.76
1980	3.83	3.58	3.08	3.69	1.94	1.82	1.56	1.87
1981	4.53	4.24	3.72	4.13	2.08	1.95	1.71	1.90
1982	5.43	5.05	4.50	4.20	2.35	2.19	1.95	1.82
1983	6.45	6.08	5.08	5.26	2.71	2.55	2.13	2.21
1984	6.54	6.18	5.03	4.67	2.63	2.49	2.03	1.88
1985	6.63	6.45	5.22	4.80	2.70	2.51	2.03	1.87
1986[3]	6.72	NA	4.88	5.20	2.87	NA	1.85	1.97

[1] *Current dollar figures were derived by converting the prices from dollars per million Btu, as they were reported in the* State Energy Price and Expenditure Data System, *to dollars per thousand cubic feet (Mcf). The conversion factors used for natural gas prices were as follows:*

1970 - 1,031 Btu/cf *1971 - 1,031 Btu/cf* *1972 - 1,027 Btu/cf* *1973 - 1,021 Btu/cf*
1974 - 1,024 Btu/cf *1975 - 1,021 Btu/cf* *1976 - 1,020 Btu/cf* *1977 - 1,021 Btu/cf*
1978 - 1,019 Btu/cf *1979 - 1,021 Btu/cf* *1980 - 1,026 Btu/cf* *1981 - 1,027 Btu/cf*
1982 - 1,028 Btu/cf *1983 - 1,031 Btu/cf* *1984 - 1,031 Btu cf* *1985 - 1,031 Btu/cf*
1986 - 1,031 Btu/cf

[2] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*

[3] *Natural gas prices for 1986 represent the Philadelphia area as reported in the* Energy User News.

NA Not available.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984).
American Gas Association, *Gas Facts* (1985).
Energy User News.

FIGURE 45

PENNSYLVANIA NATURAL GAS PRICES BY ECONOMIC SECTOR, 1970 – 1986

See Table 58, Note 3, for information on 1986 natural gas prices

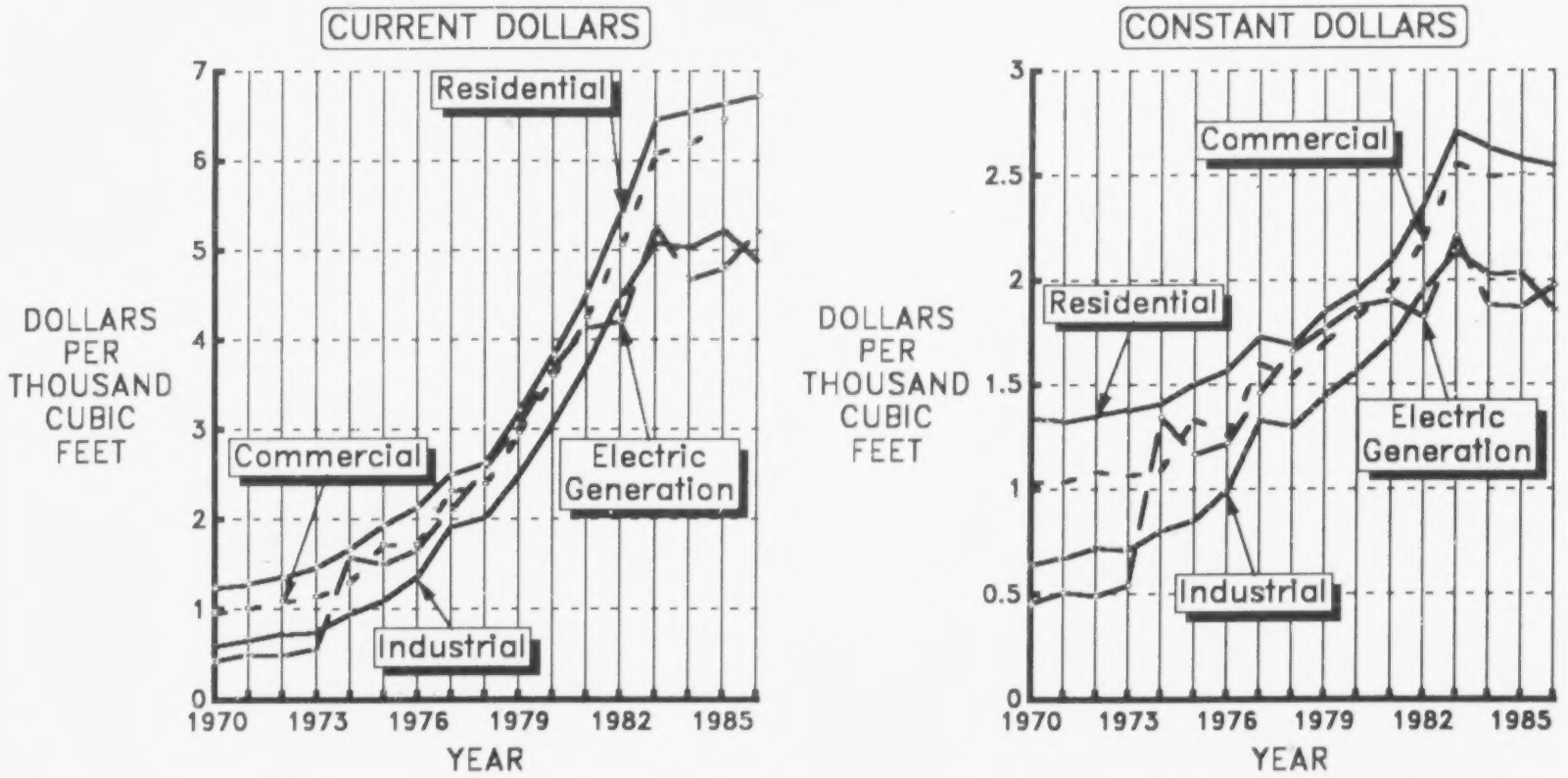


TABLE 59

PENNSYLVANIA ELECTRICITY PRICES BY ECONOMIC SECTOR
1970 - 1986
(Cents per Kwh)

	Current Dollars[1]			Constant Dollars[2]		
Year	Residential	Commercial	Industrial	Residential	Commercial	Industrial
1970	2.45	2.31	1.22	2.64	2.49	1.31
1971	2.77	2.60	1.42	2.86	2.69	1.47
1972	2.92	2.70	1.51	2.92	2.70	1.51
1973	3.08	2.84	1.59	2.90	2.67	1.50
1974	3.87	3.59	2.30	3.28	3.04	1.95
1975	4.37	4.10	2.73	3.40	3.19	2.12
1976	4.45	4.27	2.75	3.27	3.14	2.02
1977	4.79	4.64	3.10	3.31	3.20	2.14
1978	4.99	4.96	3.33	3.20	3.18	2.14
1979	5.34	5.23	3.58	3.08	3.01	2.06
1980	5.96	5.73	4.41	3.03	2.91	2.24
1981	6.66	6.47	4.94	3.06	2.98	2.27
1982	7.66	7.35	5.83	3.32	3.19	2.53
1983	7.78	7.39	5.56	3.27	3.10	2.34
1984	7.99	7.22	5.34	3.22	2.91	2.15
1985	8.29	7.49	5.63	3.22	2.91	2.19
1986[3]	8.61	7.53	5.55	3.26	2.85	2.10

[1] *Current dollar figures were derived by converting the prices from dollars per million Btu, as they were reported in the* State Energy Price and Expenditure Data System, *to cents per Kwh. The conversion factor used for electricity prices was 3,412 Btu per Kwh.*

[2] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*

[3] *Electricity prices for 1984-1986 represent the average price for the seven major electric utilities in Pennsylvania.*

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Prices and Expenditure Data Systems*, computer printout, January 13, 1987 (1970-1984).
Electric Utility Annual Reports, Ferc Form 1 (1984-1986).

FIGURE 46

PENNSYLVANIA ELECTRICITY PRICES BY ECONOMIC SECTOR, 1970 – 1986

See Table 59, Note 3 for information on 1984, 1985 and 1986 electricity prices

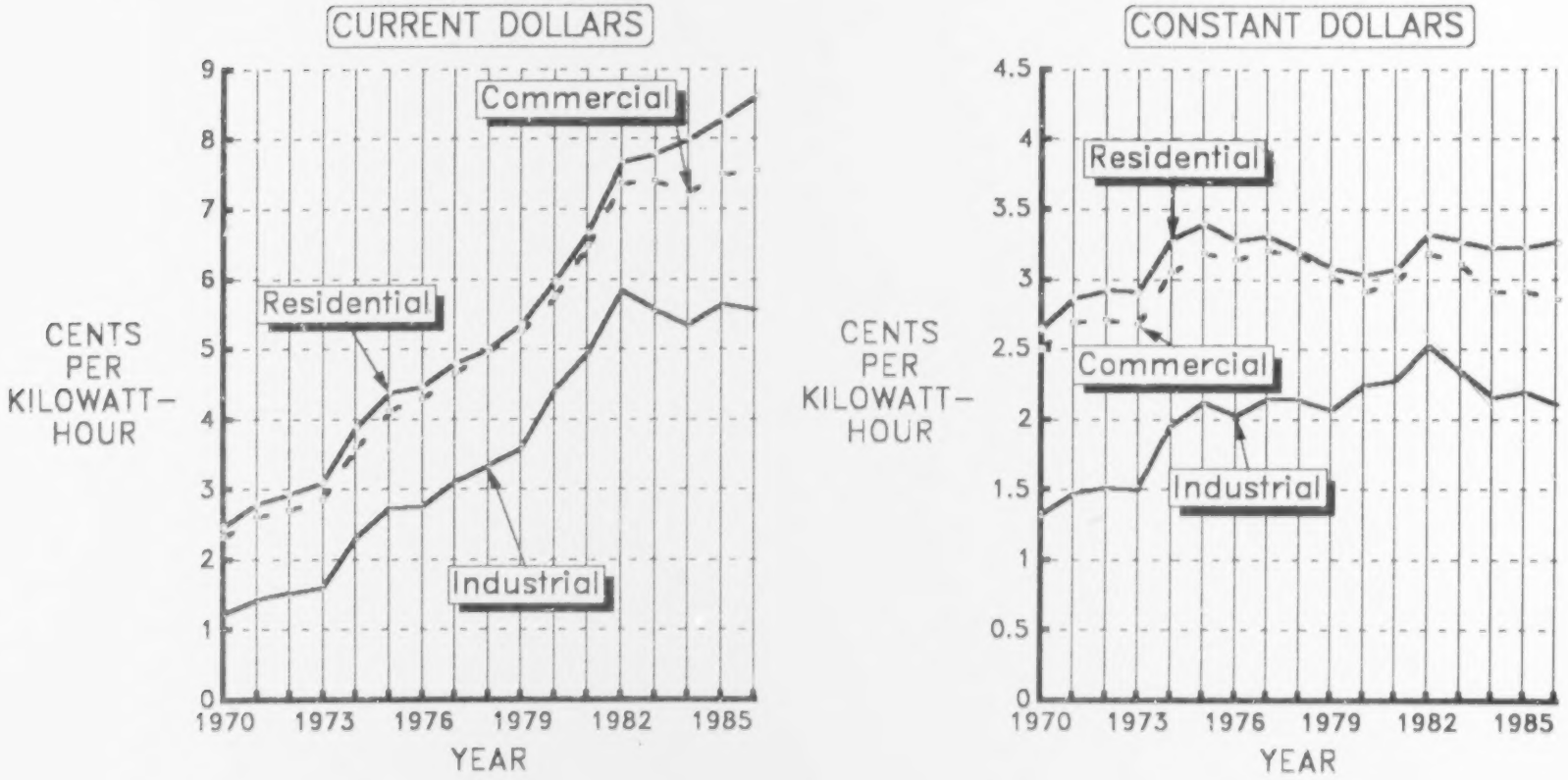


TABLE 60

PENNSYLVANIA RESIDENTIAL ENERGY PRICES BY FUEL TYPE
1970 - 1986
(Dollars per Million BTUs)

	Current Dollars						Constant Dollars[1]					
Year	Distillate Fuel	Kerosene	LPG and Ethane	Natural Gas[2]	Electricity[3]	Coal[4]	Distillate Fuel	Kerosene	LPG and Ethane	Natural Gas	Electricity	Coal
1970	1.35	1.56	2.46	1.20	7.18	1.03	1.45	1.68	2.65	1.29	7.74	1.11
1971	1.44	1.62	2.37	1.24	8.12	1.06	1.49	1.67	2.45	1.28	8.39	1.10
1972	1.45	1.58	2.58	1.31	8.56	1.14	1.45	1.58	2.58	1.31	8.56	1.14
1973	1.67	1.82	3.48	1.43	9.03	1.08	1.57	1.71	3.28	1.35	8.50	1.02
1974	2.62	2.89	4.10	1.62	11.34	2.26	2.22	2.45	3.48	1.37	9.62	1.92
1975	2.81	3.12	4.42	1.89	12.81	2.57	2.18	2.42	3.43	1.47	9.95	2.00
1976	2.93	3.26	5.31	2.09	13.04	2.27	2.15	2.40	3.90	1.54	9.58	1.67
1977	3.32	3.66	5.33	2.45	14.04	2.36	2.29	2.53	3.68	1.69	9.69	1.63
1978	3.52	3.88	5.46	2.58	14.62	2.48	2.26	2.49	3.50	1.65	9.38	1.59
1979	5.03	5.27	7.45	3.13	15.65	2.54	2.90	3.04	4.29	1.80	9.02	1.46
1980	6.95	8.04	9.00	3.73	17.47	2.70	3.53	4.08	4.57	1.89	8.87	1.37
1981	8.51	10.29	9.77	4.41	19.52	3.21	3.91	4.73	4.49	2.03	8.98	1.48
1982	8.20	10.34	10.37	5.28	22.45	3.20	3.55	4.48	4.50	2.29	9.73	1.39
1983	7.69	9.18	11.37	6.26	22.80	2.78	3.23	3.86	4.78	2.63	9.58	1.17
1984	7.85	9.15	11.83	6.34	23.42	3.08	3.16	3.69	4.76	2.55	9.43	1.24
1985	7.42	8.69	NA	6.43	24.30	4.56	2.89	3.38	NA	2.50	9.45	1.77
1986	5.73	7.55	NA	6.52	25.23	4.73	2.17	2.86	NA	2.47	9.56	1.79

[1] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*
[2] *Natural gas prices for 1986 represent the Philadelphia area as reported in the* Energy User News.
[3] *Electricity prices for 1984-1986 represent the average price for the seven major electric utilities in Pennsylvania.*
[4] *Coal prices for 1985 and 1986 represent the average price of pea size coal, as reported from the anthracite coal survey.*

NA Not available.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970–1984).
Pennsylvania Energy Office, Heating Oil Survey; Kerosene Survey; Anthracite Coal Survey (1985 and 1986).
American Gas Association, *Gas Facts* (1985).
Electric Utility Annual Reports; Ferc Form 1 (1984–1986).
Energy User News (1986).

FIGURE 47

PENNSYLVANIA RESIDENTIAL ENERGY PRICES BY FUEL TYPE IN CURRENT DOLLARS, 1970 – 1986

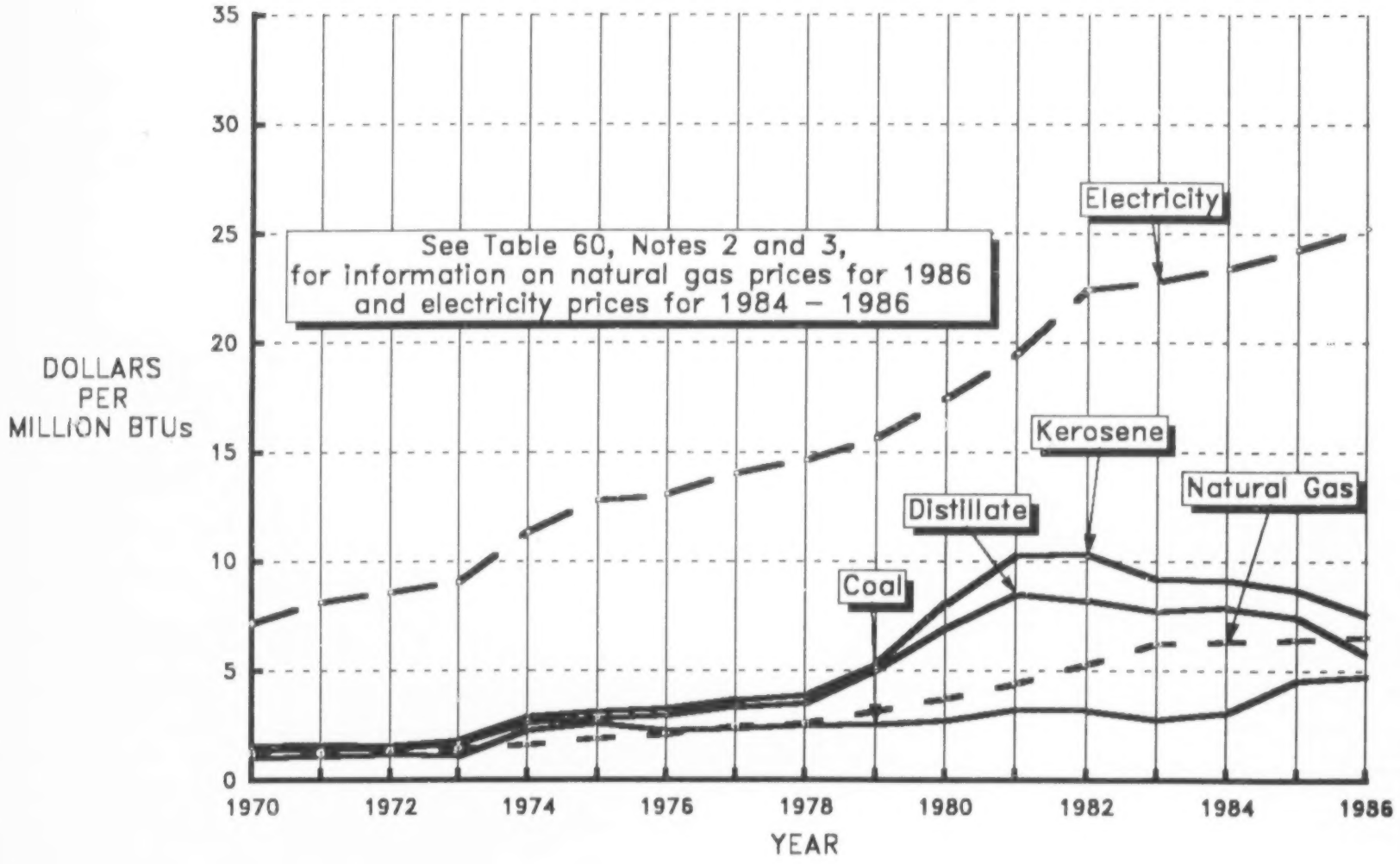


TABLE 61

PENNSYLVANIA COMMERCIAL ENERGY PRICES BY FUEL TYPE
1970 - 1986
(Dollars per Million BTUs)

	Current Dollars					Constant Dollars[1]				
Year	Distillate Fuel	Residual Fuel[2]	Natural Gas[3]	Electricity[4]	Coal	Distillate Fuel	Residual Fuel	Natural Gas	Electricity	Coal
1970	1.09	0.46	0.93	6.77	0.32	1.17	0.50	1.00	7.30	0.34
1971	1.16	0.71	0.97	7.62	0.43	1.20	0.73	1.00	7.87	0.44
1972	1.16	0.71	1.05	7.91	0.41	1.16	0.71	1.05	7.91	0.41
1973	1.33	0.84	1.11	8.32	0.30	1.25	0.79	1.05	7.83	0.28
1974	2.29	1.95	1.25	10.52	0.90	1.94	1.65	1.06	8.92	0.76
1975	2.48	2.01	1.67	12.02	1.24	1.93	1.56	1.30	9.34	0.96
1976	2.61	1.92	1.68	12.51	1.13	1.92	1.41	1.23	9.19	0.83
1977	3.01	2.27	2.26	13.60	1.13	2.08	1.57	1.56	9.39	0.78
1978	3.16	2.14	2.34	14.54	1.21	2.03	1.37	1.50	9.33	0.78
1979	4.57	3.27	2.89	15.33	1.30	2.63	1.88	1.67	8.84	0.75
1980	6.40	4.43	3.49	16.79	1.33	3.25	2.25	1.77	8.52	0.68
1981	8.02	5.35	4.13	18.96	1.57	3.69	2.46	1.90	8.72	0.72
1982	7.66	4.92	4.91	21.54	1.71	3.32	2.13	2.13	9.34	0.74
1983	6.88	4.53	5.90	21.66	1.58	2.89	1.90	2.48	9.10	0.66
1984	6.91	4.81	5.99	21.16	1.65	2.78	1.94	2.41	8.52	0.66
1985	6.27	4.91	6.26	21.95	NA	2.44	1.91	2.43	8.54	NA
1986	4.93	3.05	NA	22.07	NA	1.87	1.16	NA	8.34	NA

[1] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*
[2] *Residual fuel prices for 1985 and 1986 represent the refiner fuel prices to consumers, as reported in the* Energy User News.
[3] *Natural gas prices for 1985 represent the Philadelphia area as reported in the* Energy User News.
[4] *Electricity prices for 1984-1986 represent the average price for the seven major electric utilities in Pennsylvania.*

NA Not available.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984).
Electric Utility Annual Reports; Ferc Form 1 (1984-1986).
Energy User News (1985 and 1986).

FIGURE 48

PENNSYLVANIA COMMERCIAL ENERGY PRICES BY FUEL TYPE IN CURRENT DOLLARS, 1970 – 1986

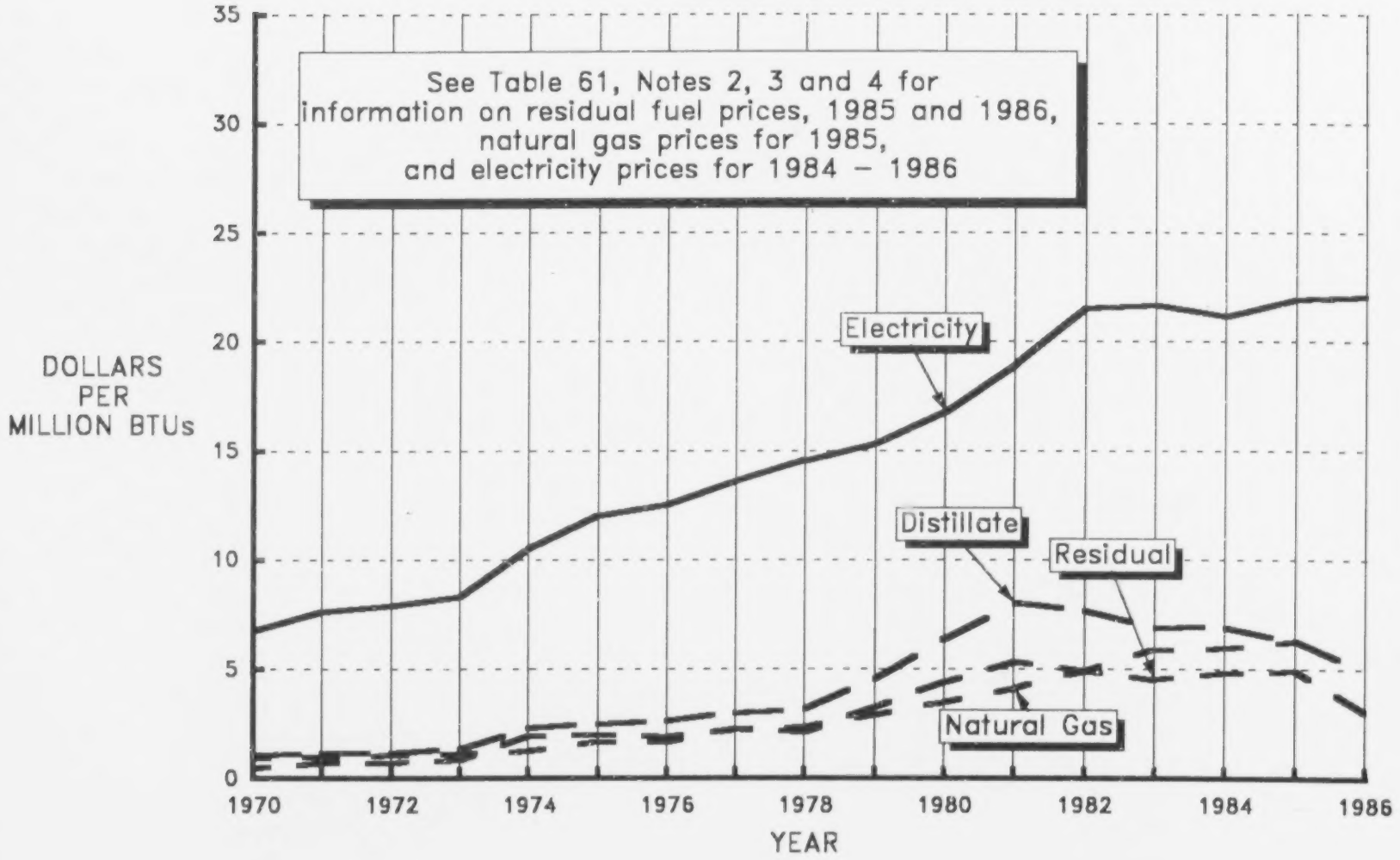


TABLE 62

PENNSYLVANIA INDUSTRIAL ENERGY PRICES BY FUEL TYPE
1970 - 1986
(Dollars per Million BTUs)

	Current Dollars					Constant Dollars[1]				
Year	Distillate Fuel	Residual Fuel[2]	Natural Gas[3]	Electricity[4]	Coal	Distillate Fuel	Residual Fuel	Natural Gas	Electricity	Coal
1970	0.71	0.50	0.57	3.58	0.41	0.77	0.54	0.61	3.86	0.44
1971	0.75	0.66	0.63	4.16	0.45	0.77	0.68	0.65	4.30	0.46
1972	0.74	0.69	0.70	4.43	0.53	0.74	0.69	0.70	4.43	0.53
1973	0.85	0.86	0.74	4.66	0.60	0.80	0.81	0.70	4.39	0.56
1974	2.17	2.07	0.92	6.74	1.27	1.84	1.76	0.78	5.72	1.08
1975	2.38	2.07	1.07	8.00	1.46	1.85	1.61	0.83	6.22	1.13
1976	2.41	1.97	1.32	8.06	1.54	1.77	1.45	0.97	5.92	1.13
1977	2.79	2.26	1.88	9.39	1.54	1.93	1.56	1.30	6.27	1.06
1978	2.85	2.24	1.98	9.76	1.84	1.83	1.44	1.27	6.26	1.18
1979	3.82	3.00	2.45	10.49	1.77	2.20	1.73	1.41	6.05	1.02
1980	5.67	4.07	3.00	12.92	2.04	2.88	2.07	1.52	6.56	1.04
1981	6.61	4.98	3.62	14.48	2.20	3.04	2.29	1.67	6.66	1.01
1982	6.87	4.75	4.38	17.09	2.27	2.98	2.06	1.90	7.41	0.98
1983	6.30	4.45	4.93	16.30	1.98	2.65	1.87	2.07	6.85	0.83
1984	6.41	4.61	4.93	15.65	1.91	2.58	1.86	1.99	6.30	0.77
1985	5.98	4.40	5.06	16.50	NA	2.33	1.71	1.97	6.42	NA
1986	4.40	2.60	4.73	16.27	NA	1.67	0.99	1.79	6.17	NA

[1] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972 = 100). See Table 66 for the CPI figures.*
[2] *Residual fuel prices for 1985 and 1986 represent prices to industrial users in Philadelphia, as reported in the* Energy User News.
[3] *Natural gas prices for 1985 represent the Philadelphia area as reported in the* Energy User News.
[4] *Electricity prices for 1984-1986 represent the average price for the seven major electric utilities in Pennsylvania.*

NA Not available.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984).
Electric Utility Annual Reports; Ferc Form 1 (1984-1986).
Energy User News (1985 and 1986).

FIGURE 49

PENNSYLVANIA INDUSTRIAL ENERGY PRICES BY FUEL TYPE IN CURRENT DOLLARS, 1970 – 1986

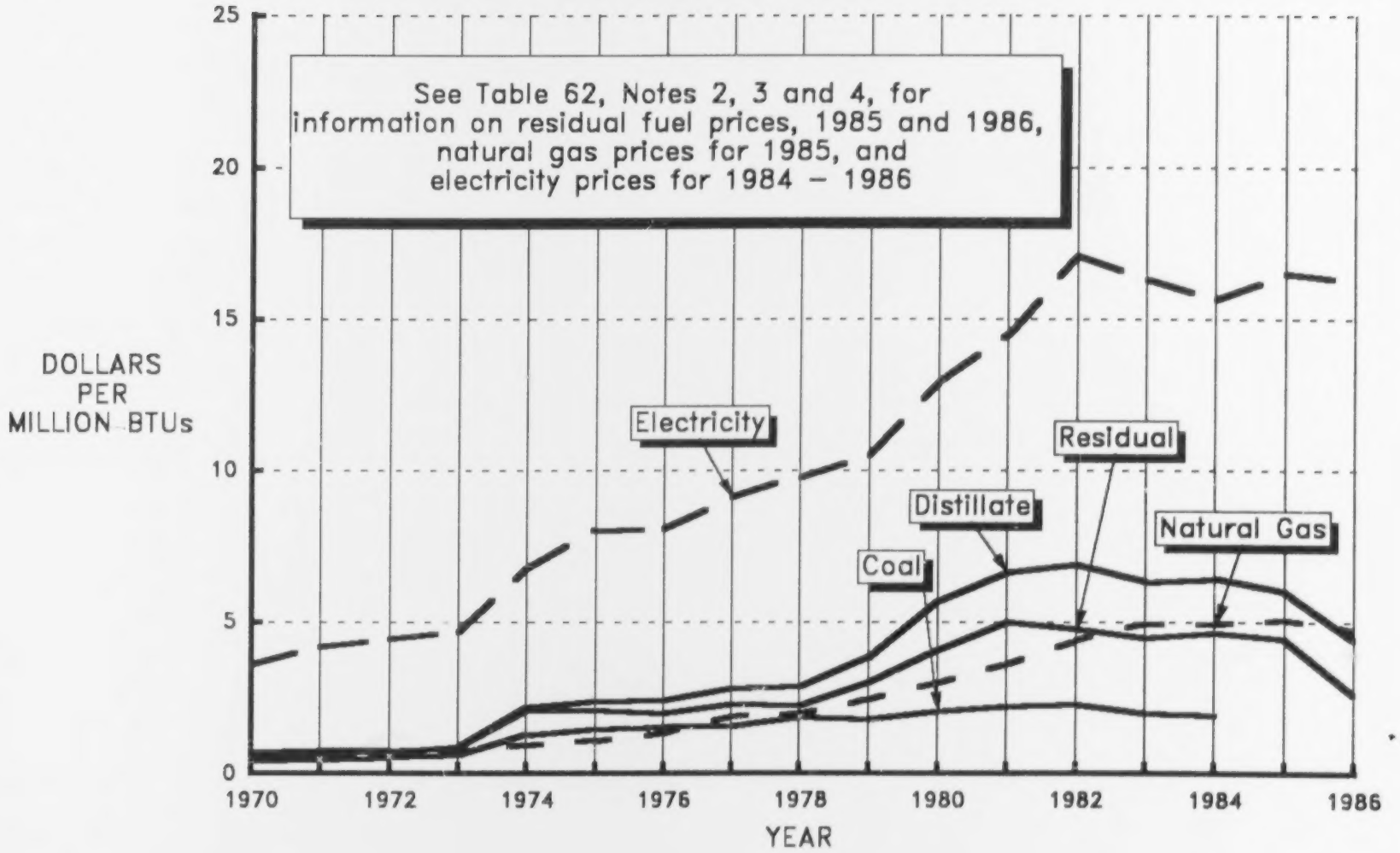


TABLE 63

PENNSYLVANIA ELECTRIC UTILITIES AVERAGE FUEL COSTS
1970 - 1985
(Dollars per Million BTUs)

	Current Dollars			Constant Dollars[1]		
Year	Oil[2]	Natural Gas[3]	Coal[4]	Oil	Natural Gas	Coal
1970	0.47	0.45	0.31	0.51	0.48	0.33
1971	0.72	0.64	0.36	0.74	0.66	0.37
1972	0.73	0.68	0.40	0.73	0.68	0.40
1973	0.89	0.73	0.45	0.84	0.69	0.42
1974	2.06	1.13	0.75	1.75	0.96	0.64
1975	2.19	1.38	0.97	1.70	1.07	0.75
1976	2.11	1.34	1.00	1.55	0.98	0.73
1977	2.25	1.77	1.05	1.55	1.22	0.72
1978	2.34	1.92	1.22	1.50	1.23	0.78
1979	3.21	2.51	1.26	1.85	1.45	0.73
1980	4.55	3.42	1.37	2.31	1.74	0.70
1981	5.57	3.97	1.66	2.56	1.83	0.76
1982	5.57	4.39	1.68	2.41	1.90	0.73
1983	4.92	5.34	1.60	2.07	2.24	0.67
1984	4.95	4.74	1.73	1.99	1.91	0.70
1985	4.60	4.27	1.67	1.79	1.66	0.65

[1] *Constant dollar figures were calculated using the Consumer Price Index (CPI) (1972) 100). See Table 66 for the CPI figures.*

[2] *Oil includes fuel oil, crude oil and small amounts of tar and gasoline. 1983 excludes petroleum coke. 1984 includes petroleum coke.*

[3] *Gas includes natural and manufactured gas and waste gas.*

[4] *Coal includes bituminous and anthracite coal and relatively small amounts of lignite and wood. 1983 includes petroleum coke. 1984 excludes petroleum coke. 1985 excludes wood.*

Source: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry* (1970-1985).

TABLE 64

PENNSYLVANIA ELECTRIC UTILITIES COAL COSTS AND RECEIPTS AND SULFUR CONTENT OF COAL BY PLANT 1985

Utility Plant	Average Cost Delivered		Quantity Received	Sulfur by Weight	Ash by Weight
	$/Ton	$/MMBtu	Thousands of Tons	Percent	Percent
Duquesne Light					
Cheswick	43.73	177.2	1,196.0	1.64	11.93
Elrama	39.73	171.5	753.0	1.51	16.11
Phillips	44.12	175.7	277.0	1.71	10.47
Metropolitan Edison (GPS)					
Portland	50.27	196.4	474.5	2.05	9.33
Titus	47.22	180.5	424.3	1.42	8.63
Pennsylvania Electric (GPS)					
Conemaugh	37.88	153.1	3,872.0	2.23	14.71
Front St.	36.47	148.7	253.0	1.83	10.85
Homer City	31.93	137.9	4,730.0	1.81	18.84
Keystone	30.26	122.5	3,986.0	1.47	14.29
Seward	27.82	114.9	616.0	1.49	13.47
Shawville	34.63	140.1	1,389.0	2.01	13.29
Warren	31.52	128.6	254.0	1.72	12.34
Pennsylvania Power					
Bruce Mansfield	42.25	175.2	5,545.0	3.75	12.21
New Castle	33.31	136.1	814.5	1.34	9.94
Pennsylvania Power & Light					
Brunner Island	45.25	180.5	3,254.0	1.83	12.63
Holtwood	19.84	110.4	237.0	0.64	26.51
Martin's Creek	53.69	209.8	785.0	1.90	11.93
Montour	45.93	181.6	3,225.0	1.42	12.58
Sunbury	27.06	124.5	1,283.0	1.39	19.28
Philadelphia Electric					
Cromby	44.23	168.4	313.0	1.63	7.74
Eddystone	45.23	173.3	920.0	1.46	8.16
West Penn Power					
Armstrong	34.36	137.0	937.9	1.83	10.72
Hatfield	37.33	147.1	3,333.3	2.27	10.55
Mitchell	33.60	137.9	470.0	2.56	12.71

Source: U.S. Department of Energy, Energy Information Administration, *Cost and Quality of Fuels for Electric Utility Plants 1985*, July 1986.

TABLE 65

REFINER ACQUISITION COST[1] OF CRUDE OIL
1970 - 1986
(Dollars per Barrel)

Year	Domestic		Imported		Composite	
	Current	Constant[2]	Current	Constant[2]	Current	Constant[2]
1970	3.46	8.24	2.96	7.05	3.40	8.10
1971	3.68	8.29	3.17	7.14	3.60	8.11
1972	3.67	7.89	3.22	6.92	3.58	7.70
1973	4.17	8.42	4.08	8.24	4.15	8.38
1974	7.18	13.30	12.52	23.19	9.07	16.80
1975	8.39	14.15	13.93	23.49	10.38	17.50
1976	8.84	14.01	13.48	21.36	10.89	17.26
1977	9.55	14.19	14.53	21.59	11.96	17.77
1978	10.61	14.70	14.57	20.18	12.46	17.26
1979	14.27	18.16	21.67	27.57	17.72	22.54
1980	24.23	28.27	33.89	39.54	28.07	32.75
1981	34.33	36.52	37.05	39.41	35.24	37.49
1982	31.22	31.22	33.55	33.55	31.87	31.87
1983	28.87	27.72	29.30	28.20	28.99	27.90
1984	28.53	26.39	28.88	26.72	28.63	26.48
1985	26.66	23.10	26.99	24.21	26.75	23.99
1986[3]	15.30	13.30	14.59	12.69	15.09	13.12

[1] *The refiner acquisition cost of crude oil for each category and for the composites are derived by dividing the sum of the total purchasing (acquisition) costs of all refiners by the total volume of all refiners' purchases.*

[2] *Constant dollar figures were calculated using Gross National Product (GNP) (1982 = 106). See Table 66 for the GNP figures.*

[3] *These figures represent an average of the first nine months of the year.*

Sources: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1985*, May 1986; *Monthly Energy Review*, December 1986.

FIGURE 50

REFINERS' ACQUISITION COST OF CRUDE OIL IN CURRENT DOLLARS, 1970 – 1986

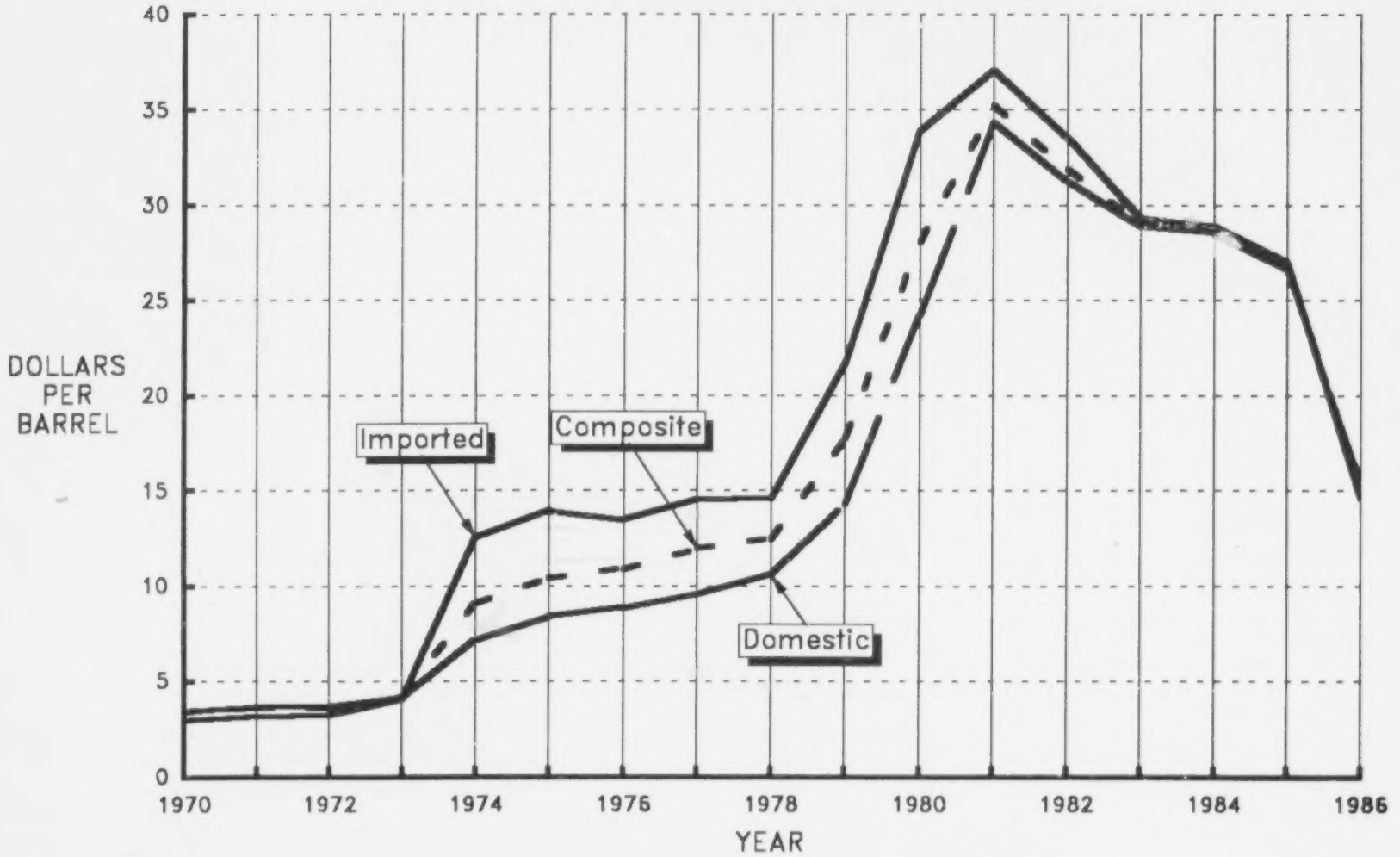


TABLE 66

NATIONAL INDICES OF PRICE INFLATION
1960 - 1986

Year	Gross National Product (1982 = 100)	Producer Price Index (1972 = 100)	Personal Consumption Expenditure (1982 = 100)	Consumer Price Index (1972 = 100)
1960	30.9	79.7	34.9	70.8
1961	31.2	79.3	35.2	71.5
1962	31.9	79.6	35.8	72.3
1963	32.4	79.3	36.3	73.2
1964	32.9	79.5	36.8	74.1
1965	33.8	81.1	37.5	75.4
1966	35.0	83.8	38.5	77.6
1967	35.9	84.0	39.5	79.8
1968	37.7	86.1	41.1	83.2
1969	39.8	89.4	42.9	87.6
1970	42.0	92.7	44.9	92.8
1971	44.4	95.6	46.8	96.8
1972	46.5	100.0	48.5	100.0
1973	49.5	113.1	51.3	106.2
1974	54.0	134.4	56.5	117.9
1975	59.3	146.9	60.8	128.7
1976	63.1	153.7	63.9	136.1
1977	67.3	163.1	67.6	144.9
1978	72.2	175.7	72.4	155.9
1979	78.6	197.8	78.9	173.5
1980	85.7	225.7	86.9	197.0
1981	94.0	246.3	94.4	217.4
1982	100.0	251.3	100.0	230.7
1983	103.8	254.5	103.7	238.1
1984	108.1	260.5	107.0	248.3
1985	111.5	259.2	111.9	257.1
1986[1]	115.0	250.5	114.3	263.8

[1] *Gross National Product and Personal Consumption Expenditure represent the third quarter of 1986; Producer Price Index and Consumer Price Index are for October 1986.*

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, Bureau of Labor Statistics and the Bureau of the Census.

10. EXPENDITURES

The tables in this section show annual expenditures for the major forms of fuel by Pennsylvania's residential, commercial, industrial and transportation sectors since 1970.

In 1984, Pennsylvania's energy consumers spent $22.6 billion on oil, natural gas, coal and electricity, up 5.0 percent from $21.5 billion in 1983. Petroleum accounted for 40.8 percent of the state's energy expenditures, electricity for 32.0 percent, natural gas for 16.3 percent and coal for 10.9 percent. Total expenditures have more than quadrupled since 1970, with expenditures for natural gas having grown the most. Expenditures for all fuel types increased between 1983 and 1984, except for petroleum expenditures, which decreased 1.7 percent to $9,216 million in 1984. Electricity expenditures were up 11.9 percent to $7.2 billion; coal expenditures increased 11.6 percent to $2.5 billion; and expenditures for natural gas increased 5.6 percent to $3.7 billion.

Expenditures for residential energy were $5.7 billion in 1984, up 8.2 percent from 1983. Expenditures have increased at a compound annual rate of 11.2 percent since 1970. In 1984, electricity expenditures accounted for the largest share of total residential expenditures, $2.8 billion. Between 1983 and 1984, electricity expenditures increased 11.1 percent. Natural gas expenditures were $1.7 billion and petroleum expenditures were $1.1 billion for 1984.

For commercial energy use, expenditures were just over $3 billion in 1984, up 10.3 percent from 1983. Electricity and natural gas accounted for the largest share, $1.9 and $0.8 billion, respectively. Commercial expenditures have increased annually at an average rate of 13.6 percent since 1970.

Industrial expenditures totaled $5.5 billion in 1984, an increase of 9.1 percent from 1983. The greatest portion of these expenditures, $2.5 billion, was for electricity. Expenditures for natural gas followed with $1.2 billion. Petroleum and coal expenditures were $1.1 and $0.8 billion, respectively. Industrial expenditures have increased at a compound annual rate of 10.8 percent between 1970 and 1984.

Energy costs for the major fuels of the transportation sector were $6.2 billion in 1984, an increase of 4.4 percent from the 1984 level. Motor gasoline, which peaked at $5.8 billion in 1981, accounted for $4.7 billion of the 1984 total. It increased 2.9 percent over 1983.

TABLE 67

PENNSYLVANIA END-USE ENERGY EXPENDITURES BY FUEL TYPE
1970 - 1984
(Millions of Dollars and Percent of Total)

Year	Petroleum[1]	Natural Gas	Coal	Electricity[2]	Total
1970	2,452 (48%)	652 (13%)	656 (13%)	1,340 (26%)	5,100
1971	2,681 (47%)	716 (13%)	689 (12%)	1,597 (28%)	5,683
1972	2,882 (46%)	793 (13%)	784 (13%)	1,790 (29%)	6,249
1973	3,122 (45%)	805 (12%)	934 (14%)	2,025 (29%)	6,886
1974	4,725 (47%)	869 (9%)	1,727 (17%)	2,670 (27%)	9,991
1975	4,705 (44%)	960 (9%)	1,990 (19%)	3,074 (29%)	10,729
1976	5,391 (45%)	1,173 (10%)	2,082 (17%)	3,287 (28%)	11,933
1977	6,148 (46%)	1,408 (11%)	1,966 (15%)	3,750 (28%)	13,272
1978	6,197 (44%)	1,488 (11%)	2,288 (16%)	4,053 (29%)	14,026
1979	8,254 (48%)	1,973 (11%)	2,533 (15%)	4,455 (26%)	17,215
1980	10,482 (51%)	2,494 (12%)	2,582 (12%)	5,122 (25%)	20,680
1981	11,275 (50%)	3,041 (13%)	2,636 (12%)	5,817 (26%)	22,769
1982	9,849 (45%)	3,236 (15%)	2,303 (11%)	6,361 (29%)	21,749
1983	9,371 (44%)	3,491 (16%)	2,198 (10%)	6,448 (30%)	21,508
1984	9,216 (41%)	3,687 (16%)	2,452 (11%)	7,218 (32%)	22,573

[1] *Includes petroleum coke used at electric utilities.*
[2] *Figures represent electricity purchased by end users.*

Note: Percentages may not equal 100 because of independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987, (1970-1984).

FIGURE 51

PENNSYLVANIA END-USE ENERGY EXPENDITURES
BY FUEL TYPE, 1970 - 1984

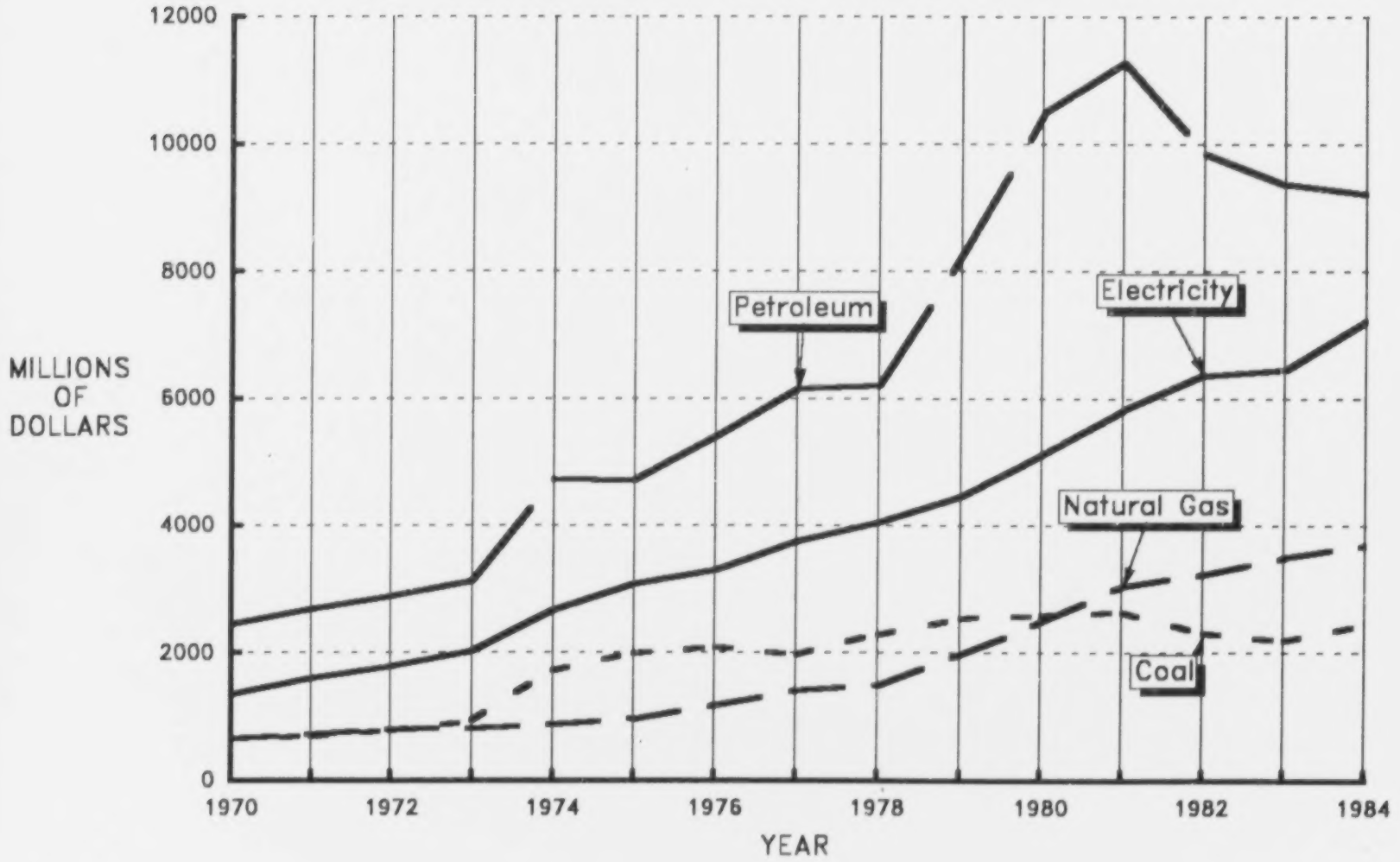


TABLE 68

PENNSYLVANIA EXPENDITURES FOR FUELS AND ELECTRICITY BY THE RESIDENTIAL SECTOR 1970 - 1984

(Millions of Dollars and Percent of Total)

Year	Petroleum	Natural Gas	Coal	Electricity	Total
1970	293 (23%)	367 (29%)	48 (4%)	564 (44%)	1,271
1971	314 (22%)	389 (27%)	48 (3%)	673 (47%)	1,423
1972	344 (22%)	412 (27%)	38 (2%)	751 (49%)	1,545
1973	394 (23%)	427 (25%)	37 (2%)	845 (50%)	1,703
1974	558 (26%)	451 (21%)	64 (3%)	1,058 (50%)	2,131
1975	588 (25%)	525 (22%)	60 (3%)	1,210 (51%)	2,383
1976	679 (26%)	617 (23%)	51 (2%)	1,284 (49%)	2,631
1977	765 (26%)	694 (23%)	53 (2%)	1,447 (49%)	2,959
1978	757 (24%)	750 (24%)	58 (2%)	1,535 (50%)	3,100
1979	1,048 (28%)	919 (25%)	42 (1%)	1,677 (45%)	3,686
1980	1,287 (30%)	1,100 (25%)	51 (1%)	1,893 (44%)	4,331
1981	1,382 (28%)	1,292 (27%)	75 (2%)	2,112 (43%)	4,861
1982	1,184 (23%)	1,475 (29%)	68 (1%)	2,410 (47%)	5,137
1983	1,080 (20%)	1,628 (31%)	51 (1%)	2,516 (48%)	5,275
1984	1,117 (20%)	1,734 (30%)	61 (1%)	2,796 (49%)	5,708

Note: Percentages may not equal 100 because of independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984)

TABLE 69

PENNSYLVANIA EXPENDITURES FOR FUELS AND ELECTRICITY BY THE COMMERCIAL SECTOR
1970 - 1984
(Millions of Dollars and Percent of Total)

Year	Petroleum	Natural Gas	Coal	Electricity	Total
1970	90 (18%)	96 (19%)	12 (2%)	314 (61%)	512
1971	96 (16%)	110 (18%)	16 (3%)	376 (63%)	597
1972	103 (16%)	132 (20%)	11 (2%)	415 (63%)	662
1973	108 (15%)	132 (18%)	9 (1%)	466 (65%)	715
1974	171 (19%)	131 (15%)	20 (2%)	582 (64%)	904
1975	164 (15%)	168 (15%)	23 (2%)	770 (68%)	1,125
1976	174 (14%)	213 (17%)	21 (2%)	839 (67%)	1,247
1977	211 (15%)	258 (18%)	20 (1%)	951 (66%)	1,440
1978	209 (14%)	263 (17%)	28 (2%)	1,033 (67%)	1,533
1979	259 (15%)	328 (19%)	20 (1%)	1,109 (65%)	1,716
1980	289 (15%)	424 (21%)	22 (1%)	1,248 (63%)	1,983
1981	347 (15%)	544 (23%)	31 (1%)	1,446 (61%)	2,368
1982	288 (11%)	632 (24%)	36 (1%)	1,664 (64%)	2,620
1983	329 (12%)	701 (25%)	28 (1%)	1,700 (62%)	2,758
1984	320 (11%)	779 (26%)	30 (1%)	1,914 (63%)	3,043

Note: Percentages may not equal 100 because of independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984).

TABLE 70

PENNSYLVANIA EXPENDITURES FOR FUELS AND ELECTRICITY BY THE INDUSTRIAL SECTOR 1970 - 1984

(Millions of Dollars and Percent of Total)

Year	Petroleum	Natural Gas	Coal	Electricity	Total
1970	283 (22%)	186 (14%)	381 (29%)	462 (35%)	1,312
1971	316 (22%)	211 (15%)	351 (25%)	548 (38%)	1,426
1972	338 (21%)	247 (15%)	402 (25%)	624 (39%)	1,611
1973	423 (23%)	245 (13%)	478 (26%)	715 (38%)	1,861
1974	765 (25%)	274 (9%)	999 (33%)	1,030 (34%)	3,068
1975	659 (21%)	265 (9%)	1,084 (35%)	1,093 (35%)	3,101
1976	774 (23%)	342 (10%)	1,142 (33%)	1,163 (34%)	3,421
1977	913 (24%)	456 (12%)	1,021 (27%)	1,351 (36%)	3,742
1978	885 (22%)	474 (12%)	1,196 (30%)	1,484 (37%)	4,039
1979	1,240 (25%)	720 (15%)	1,281 (26%)	1,668 (34%)	4,909
1980	1,382 (25%)	959 (18%)	1,153 (21%)	1,973 (36%)	5,467
1981	1,549 (26%)	1,191 (20%)	1,053 (17%)	2,246 (37%)	6,039
1982	1,345 (25%)	1,123 (21%)	623 (12%)	2,273 (42%)	5,364
1983	1,088 (21%)	1,152 (23%)	627 (12%)	2,215 (44%)	5,082
1984	1,116 (20%)	1,162 (21%)	779 (14%)	2,486 (45%)	5,543

Note: Percentages may not equal 100 because of independent rounding.

Sources: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987 (1970-1984).

TABLE 71

PENNSYLVANIA EXPENDITURES FOR FUELS BY THE TRANSPORTATION SECTOR
1970 - 1984
(Millions of Dollars)

Year	Motor Gasoline	Distillate Fuel	Aviation Gasoline	Jet Fuel	Lubricants	Residual Fuel	LPG % Ethane	Total
1970	1,503	99	11	37	43	15	0	1,709
1971	1,623	97	10	36	45	24	1	1,835
1972	1,735	119	10	36	50	21	1	1,972
1973	1,780	168	10	46	40	30	1	2,075
1974	2,456	267	13	77	51	67	2	2,933
1975	2,635	255	11	96	51	66	1	3,115
1976	2,978	322	13	104	53	69	2	3,540
1977	3,232	383	14	121	55	81	2	3,888
1978	3,209	420	14	145	65	60	2	3,915
1979	4,197	650	15	216	90	86	2	5,256
1980	5,461	885	23	360	112	113	3	6,957
1981	5,794	944	22	348	134	153	4	7,398
1982	5,303	842	16	327	117	45	5	6,655
1983	4,600	799	16	313	120	44	6	5,897
1984	4,735	880	15	343	132	45	9	6,159

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Price and Expenditure Data System*, computer printout, January 13, 1987, (1970-1984).

GLOSSARY

Anthracite Coal: A hard black lustrous coal containing a high percentage of fixed carbon, a low percentage of volatile matter and generally having a heating value of 13,500 to 15,000 Btu per pound. Often referred to as "hard coal".

Asphalt: A dark brown to black cement-like material. The predominant constituents are bitumens which are obtained in petroleum processing. Its constituency can vary from a liquid to a solid. It is used as a base for road surfacing and other adhesive or protective purposes.

Aviation Gasoline: All special grades of gasoline for use in aviation reciprocating engines. It includes all refinery products within the gasoline range or additives that are blended into finished aviation gasoline.

Barrel: A volumetric unit of measurement equivalent to 42 U.S. gallons when referring to petroleum and petroleum products.

Bituminous Coal: A coal that is high in carbonaceous matter having a volatility greater than anthracite, a calorific value greater than lignite and generally having a heat value of 12,000 to 15,000 Btu per pound. Often referred to as "soft coal".

British Thermal Unit (Btu): The amount of energy required to raise the temperature of one pound of water 1 degree Fahrenheit at or near 39 degrees Fahrenheit. One Btu is equivalent to about 252 International Steam Table calories.

Capacity: The load for which a generator, turbine, transformer, transmission circuit, station, or system is rated. Installed capacity is that capacity shown by the nameplates of electrical apparatus, such as generating units, turbines, or other equipment in a station or system. The nameplate capacity is the full-load continuous rating of a generator, prime mover, or other electrical equipment under specified conditions as designated by the manufacturer.

Coal-Producing Districts: A classification of coalfields defined in the Bituminous Coal Act of 1937. The districts were originally established to aid in formulating minimum prices of bituminous and subbituminous coal and lignite. Because much statistical information was compiled in terms of these districts, their use for statistical purposes has continued since the abandonnment of that legislation in 1943. District 24 was added for the anthracite-producing district in Pennsylvania.

Coke: Bituminous coal from which constituents have been driven off by heat so that the fixed carbon and the ash are fused together. It is used primarily in blast furnaces for smelting ores, especially iron ore.

Commercial Sector: That section of the economy involving nonmanufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, laundries, and other service enterprises; health, social, and educational institutions; and Federal, State, and local governments. Street lights, pumps, bridges, and public services are also included.

Constant Dollars: Dollars adjusted to eliminate inflation from their value to reflect the value of one dollar in a base

year; e.g., if the price in current dollars of gasoline has increased 15 percent, but the inflation rate is also 15 percent, the price in constant dollars has not gone up.

Crude Oil: A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.

Crude Oil Refinery Input: Total crude oil (including lease condensate) input to crude oil distillation units and other processing units.

Current Dollars: Dollar values that have not been corrected for changes in the general price level.

Degree Days: A unit that represents one degree of declination from a given point (as 65 degrees) in the mean daily outdoor temperature and that is used to measure heat requirements. A "cooling degree day" represents each degree of outdoor air temperature above 65 degrees Fahrenheit. "Heating degree days" are deviations of the mean daily temperature below 65 degrees Fahrenheit.

Development Well: A well drilled within a proven area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

Distillate Fuel Oil: A light fuel oil distilled off during the refining process. Included are products known as No. 1 and No. 2 heating oils, diesel fuels, and No. 4 fuel oil. These products are used primarily for space heating, on-and-off highway diesel engine fuel and electric power generation.

Dry Hole: An exploratory or development well found to be incapable of producing either oil or gas in sufficient quantities to justify completion as an oil or gas well.

Electric Utility: An enterprise engaged in the production, transmission or distribution of electricity for use by the public, including investor-owned, cooperatively-owned and government-owned (municipal systems, Federal agencies, state projects, and public power districts).

Electrical System Energy Losses: The amount of energy lost during generation, transmission, and distribution of electricity, including plant use and electrical energy that is unaccounted for.

End-User: Any ultimate consumer of any type of fossil fuel (petroleum, coal, natural gas) or electricity, whether generated by fossil fuel or other energy sources. End-users are often classified by economic sector, such as residential, commercial, industrial, transportation, agriculture, and government.

Energy: The ability to do work. Electric energy is measured in watt-hours(Wh) and heat energy is generally measured in British thermal units (Btu).

Ethane: A normally gaseous, colorless compound recovered as a liquid at natural processing plants and refineries. It is used primarily as petrochemical feedstock for eventual production of chemicals and plastic materials.

Exploratory Well: A well drilled to find and produce oil or gas in an unproved area; to find a new reservoir in a field previously found to be productive of oil or gas in another reservoir; or to extend the limit of a known oil or gas reservoir.

FOB (Free on Board) Price of Imported Oil: The FOB price is the price actually charged at the producing country's port of loading. The reported price includes deductions for any rebates and discounts and additions of premium where applicable, and should be the actual price paid with no adjustments for credit terms.

Gallon: A unit of liquid capacity equal to 231 cubic inches or four quarts.

Generation (Electric): The act of producing electric energy from other forms of energy; also, the amount of electric energy so produced, expressed in watt-hours (Wh). Gross generation is the total amount of electric energy produced by the generating units in a generating station or stations, measured at the generator terminals. Net generation is equal to gross generation less the electric energy consumed at the generating station for station use.

Geothermal Energy: The heat energy in the earth's crust which derives from the earth's molten interior. It can be tapped as steam or by injection of water to form steam.

Gigawatt (Gw): One billion watts.

Gross National Product (GNP): The total value of goods and services produced by the nation's economy, before deduction of depreciation charges and other allowances for capital consumption. It includes the total purchases of goods and services by private consumers and government, gross private domestic capital investment, and net foreign trade.

Gross National Product (GNP) Implicit Price Deflator: The implicit price deflator is the index for GNP. The index is the ratio of GNP in current prices to GNP in constant prices. It is a weighted average of the price indexes used to deflate the components of GNP, the implicit weights used being expenditures in the current period. All expenditures are valued in prices of the base year to obtain the constant-dollar GNP.

Housing Unit: A structure or part of a structure in which a household lives or could live, with access to the outside of the building either directly or through a common hall. Housing units do not include group quarters, such as prisons, hospitals, dormitories, nursing homes, fraternity/ sorority houses, or convents, in which 10 or more unrelated persons live. Hotels, motel rooms, mobile homes, and trailers are considered housing units if permanently occupied by a household.

Hydroelectric Power: Electricity generated by an electric power plant whose turbines are driven by falling water.

Imports: Receipts into the 50 States and the District of Columbia of foreign goods (including goods from U. S. territories and U. S. Foreign Trade Zones) that are classified

by customs officials as "imports for consumption" or "withdrawals from bonded warehouses for consumption," including withdrawals from bonded warehouses for military offshore use and for bunkering of vessels or aircraft engaged in international commerce.

Industrial Sector: The sector of the economy involved in manufacturing, construction, mining, agriculture, fishing, and forestry.

Installed Capacity: The sum of the engineering rating in watts of a public utility's electric generating units. The expected amount of power that can be produced by a specific unit or by a collection of units.

Internal Combustion Plant: A plant in which the prime mover is an internal combustion engine. An internal combustion engine has one or more cylinders in which the process of combustion takes place, converting energy released from the rapid burning of a fuel-air mixture into mechanical energy. Diesel engines are the principal types used in electric plants.

Jet Fuel: Includes both naphtha-type and kerosene-type jet fuel meeting standards for use in aircraft turbine engines. Although most jet fuel is used in aircraft, some is used to generate electricity in gas turbines.

Kerosene: A petroleum middle distillate having burning properties suitable for use as an illuminant when burned in wick lamps. It is used primarily in space heaters, cooking stoves, and water heaters.

Kilowatt (Kw): One thousand watts.

Lignite: A brownish-black coal of low rank with high inherent moisture and volatile matter. It is also referred to as "brown coal." It is used almost exclusively for electric power generation. It has a heating value of 6,000 to 7,500 Btu per pound.

Liquefied Petroleum Gases: Ethane, ethylene, propane, propylene, normal butane, butylene, ethane-propane mixtures, propane-butane mixtures, and isobutane produced at refineries or natural gas processing plants, including plants that fractionate raw natural gas plant liquids.

Load Factor: The ratio of the average load carried by an electric power plant or system during a specific period to its peak load during that period.

Lubricants: All lubricating oils containing more than 50 percent by volume of refined petroleum distillate or specially treated petroleum residuum. Included are lubricating greases, lube base stocks, and all grades of lubricating oils from spindle oil and cylinder oil to those used in greases.

Megawatt (Mw): One million watts. One thousand kilowatts.

Methane: A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, that have been blended to form a fuel suitable for use in spark ignition engines. Included are leaded and unleaded products and all refinery products.

Natural Gas: A mixture of hydrocarbon compounds and small quantities of various non-hydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs at reservoir conditions.

Natural Gas, Marketed Production: Gross withdrawals from producing reservoirs less gas used for repressuring and quantities vented and flared.

Natural Gas Plant Liquids: Products obtained from processing natural gas at natural gas processing plants, including natural gasoline plants, cycling plants, and fractionators. Products obtained include ethane, liquefied petroleum gases (propane, butane, propane-butane mixtures, and ethane-propane mixtures), isopentane, natural gasoline, unfractionated streams, plant condensate, and minor quantities of other finished products such as motor gasoline, special naphthas, jet fuel kerosene, and distillate fuel oil.

Natural Gas Wellhead Price: The wellhead price of natural gas is calculated by dividing the total reported value at the wellhead by the total quantity produced as reported by the appropriate agencies of individual producing states and the U. S. Geological Survey. The price includes all costs prior to shipment from the lease including gathering and compression costs in addition to state production, severance, and similar charges.

No. 1 Diesel Fuel: A volatile distillate fuel used in high-speed diesel engines operated under wide variations of speed and load, such as city buses.

No. 1 Fuel Oil: A light distillate used in vaporizing-type burners.

No. 2 Distillate: A general term for both No. 2 diesel fuel and No. 2 Fuel Oil.

No. 2 Diesel Fuel: A lower volatility oil for use in high-speed diesel engines operated generally under uniform speed and load conditions, such as railroad engines and heavy trucks.

No. 2 Fuel Oil: A distillate used in atomizing-type burners for home and other moderate-size heating applications.

No. 4 Fuel Oil: A blend of distillate and residual fuel oil used for commercial burners in larger-size heating applications, such as in industrial plants. A No. 4-D is used for some low-speed diesel engines.

Nuclear Power: Electricity generated by an electric power plant whose turbines are driven by steam generated in a reactor by heat from the fissioning of nuclear fuel.

Organization of the Petroleum Exporting Countries (OPEC): An international cartel of thirteen member nations including oil-producing and exporting countries that have organized for the purpose of negotiating with oil companies on matters of oil production, prices and future concession rights. Current membership includes: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

Other Hydrocarbons (Petroleum): Other materials processed at refineries. Includes coal tar derivatives, hydrogen, gilsonite, and natural gas received by the refinery for reforming into hydrogen.

Petroleum: A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oil, refined petroleum products, natural gas plant liquids, and non-hydrocarbon compounds blended into finished petroleum products.

Petroleum Imports: Imports of petroleum into the 50 States and the District of Columbia from foreign countries, U. S. territories, and the U. S. Foreign Trade Zones. Included are imports for the Strategic Petroleum Reserve and withdrawals from bonded warehouses for on-shore consumption, offshore bunker use, and military use. Receipts of foreign petroleum into bonded warehouses, into U. S. territories, and U. S. Foreign Trade Zones are not included.

Petroleum Products: Petroleum products are obtained from the processing of crude oil (including lease condensate), natural gas, and other hydrocarbon compounds. Petroleum products include unfinished oils, liquefied petroleum gases, pentanes plus, aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, naphtha less than 400 degrees Fahrenheit, other oils over 400 degrees Fahrenheit end point, special naphthas, lubricants, waxes, petroleum coke, asphalt, road oil, still gas and miscellaneous products.

Petroleum Products Supplied: Total petroleum products supplied is the sum of the product supplied for each petroleum product, crude oil, unfinished oils, and gasoline blending components. For each of these, except crude oil, product supplied is calculated by adding refinery production, natural gas plant liquids production, new supply of other liquids imports, and stock withdrawals; and subtracting stock additions, refinery inputs, and exports.

Pipeline: All parts of those physical facilities through which gas is moved in transportation, including pipe, valves and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies.

Plant (Electric): A station at which are located prime movers, electric generators, and auxiliary equipment for converting mechanical, chemical, and/or nuclear energy into electric energy.

Primary Energy: Energy available directly from the original fuel, such as petroleum or natural gas, rather than from a secondary form, such as electricity.

Prime Mover: The engine, turbine, water wheel or similar machine which drives an electric generator.

Propane: A colorless, highly volatile hydrocarbon that is gaseous at ordinary atmospheric conditions and readily recovered as a liquid at natural gas processing plants and refineries. It is used primarily for residential and commercial heating and cooling, and also as a fuel for transportation and industrial uses, including petrochemical feedstock uses.

Proved Reserves: The estimated quantities of crude oil or natural gas which geological and engineering data demonstrate with reasonable certainty to be recoverable in the future from known reservoirs under existing economic and operating conditions.

Quadrillion: One million billion or 10^{15}.

Refined Petroleum Products: Products obtained from the processing of crude oil, unfinished oils, natural gas liquids, and other miscellaneous hydrocarbon compounds. Includes aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, ethane, liquefied petroleum gases, petro-chemical feedstocks, special naphthas, lubricants, paraffin wax, petroleum coke, asphalt, road oil, still gas, natural gasoline, unfractionated streams and miscellaneous products.

Refiner Acquisition Cost: The cost of crude oil to the refiner, including transportation and fees. The composite cost is the weighted average of domestic and imported crude oil costs.

Refinery: An industrial plant which processes crude oil and manufactures refined petroleum products.

Renewable Energy: Energy from sources that can be or are naturally replenished, such as wind, solar, tidal, biomass, geothermal.

Residential Sector: That sector of the economy which includes private household establishments that consume energy primarily for space heating, water heating, air conditioning, cooking, lighting, clothes drying and refrigeration.

Residual Fuel Oil: The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. Included are products known as No. 5 and No. 6 fuel oil, heavy diesel oil, Navy Special Fuel Oil, Bunker C fuel oil, and acid sludge and pitch used as refinery fuels. Residual fuel oil is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.

Retail Sales: Retail sales of coal for commercial or residential heating.

Road Oil: Any heavy petroleum oil, including residual asphaltic oils, used as a dust palliative and for surface treatment of roads and highways. It is generally produced in six grades from O, the most liquid, to 5, the most viscous.

Special Naphthas: All finished products within the gasoline range, specifically refined to a specified flash point and boiling range for use as paint thinners, cleaners, and solvents. Excluded are naphthas to be blended or marketed as motor gasoline or aviation gasoline, or to be used as petrochemical and synthetic natural gas (SNG) feedstock.

Spot Price: A transaction price concluded "on the spot," that is, on a one-time, prompt basis; usually the transaction involves only one specific quantity of product. This contrasts with a term contract sale price, which obligates the

seller to deliver a product at an agreed frequency and price over an extended period.

Storage, Underground: The utilization of subsurface facilities for storing gas which has been transferred from its original location for the primary purpose of load balancing. The facilities are usually natural geological reservoirs such as depleted oil or gas fields or water bearing sands sealed on the top by an impermeable cap rock. The facilities also may be manmade or natural caverns.

Strategic Petroleum Reserve (SPR): Petroleum stocks maintained by the Federal Government for use during periods of major supply interruption.

Subbituminous Coal: Black lignite or lignite coal of rank intermediate between lignite and bituminous coal. Used almost exclusively for electric power generation. It has a heating value of 9,000 to 11,000 Btu per pound.

Surface Mine: A mine producing coal which is usually within a few hundred feet of the surface by the removal of overburden (earth above or around the coal) to expose the coal bed which is then mined using surface excavation equipment such as draglines, power shovels, bulldozers, loaders and augers. It may also be known as an area, contour, open-pit, strip, or auger mine.

Therm: A unit of heating value equivalent to 100,000 British thermal units (Btu).

Transportation Sector: The sector of the economy engaged in moving people and commodities in both the public and private sectors. Included are military, railroad, vessel bunkering, and marine uses, as well as the pipeline transmission of natural gas.

Unaccounted for Crude Oil: Represents the arithmetic difference between the indicated demand for crude oil and the total disposition of crude oil. Indicated demand is the sum of crude oil production and crude oil imports less changes in crude oil stocks. Total disposition of crude oil is the sum of refinery input of crude oil, crude oil exports, crude oil burned as fuel, and crude oil losses.

Unaccounted for Gas: The difference between the gas available from all sources and the total gas accounted for as sales, net interchange and company use. This difference includes leakage or other actual losses, discrepancies due to meter inaccuracies, variations of temperature and/or pressure, other variants, particularly due to measurements being made at different times, and in cycle billings, an amount of gas supply used but not billed as of the end of a period.

Underground Mine: A mine producing coal by tunneling into the earth to the coal bed which is then mined using underground mining equipment such as cutting machines and continuous, longwall and shortwall mining machines. Underground mines are classified according to the type of opening used to reach the coal, i.e., drift (level tunnel), slope (inclined tunnel) or shaft (vertical tunnel).

Watt: Electrical unit of power or work equal to one ampere flowing under pressure of one volt.

CONVERSION FACTORS

The following conversion factors are those used throughout this report to change the numbers from physical units to British Thermal Units (Btu).

CONVERSION FACTORS

Approximate Heat Content of Various Fuels		1978	1979	1980	1981	1982	1983	1984	1985-86
Anthracite									
Production	Million Btu/short ton	23.079	23.170	22.869	23.291	23.289	22.734	23.107	22.428
Imports/Exports	Million Btu/short ton	25.400	25.400	25.400	25.400	25.400	25.400	25.400	25.400
Consumption	Million Btu/short ton	22.398	22.069	21.405	22.080	22.485	21.583	22.322	20.817
Electric Utilities	Million Btu/short ton	17.104	17.454	17.652	18.168	18.160	16.516	17.018	16.784
Non-Utility Users	Million Btu/short ton	24.388	24.272	22.719	23.749	24.530	24.536	25.128	23.031
Bituminous Coal and Lignite									
Production	Million Btu/short ton	22.242	22.449	22.411	22.302	22.234	22.053	22.069	21.871
Imports	Million Btu/short ton	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000
Exports	Million Btu/short ton	26.501	26.570	26.404	26.176	26.231	26.300	26.410	26.320
Consumption	Million Btu/short ton	22.014	22.100	21.950	21.712	21.671	21.581	21.574	21.372
Electric Utilities	Million Btu/short ton	21.284	21.372	21.301	21.091	21.200	21.141	21.108	20.965
Coke Plants	Million Btu/short ton	26.800	26.800	26.800	26.800	26.800	26.800	26.800	26.800
Crude Oil									
Production/Exports	Million Btu/barrel	5.800	5.800	5.800	5.800	5.800	5.800	5.800	5.800
Imports	Million Btu/barrel	5.802	5.810	5.812	5.818	5.826	5.825	5.823	5.832
Crude Oil and Petroleum Products									
Imports	Million Btu/barrel	5.839	5.810	5.796	5.775	5.775	5.774	5.745	5.736
Exports	Million Btu/barrel	5.808	5.832	5.820	5.812	5.820	5.800	5.850	5.814
Petroleum Products									
Consumption	Million Btu/barrel	5.519	5.494	5.479	5.448	5.415	5.406	5.395	5.387
Imports	Million Btu/barrel	5.955	5.811	5.748	5.659	5.664	5.677	5.613	5.572
Exports	Million Btu/barrel	5.814	5.864	5.841	5.837	5.829	5.800	5.867	5.819
LPG Consumption	Million Btu/barrel	3.669	3.680	3.674	3.643	3.615	3.614	3.599	3.603
Natural Gas, dry									
Production, dry	Million Btu/barrel	1,019	1,021	1,026	1,027	1,028	1,031	1,031	1,033
Production, wet	Million Btu/barrel	1,088	1,092	1,098	1,103	1,107	1,115	1,109	1,113
Consumption	Million Btu/barrel	1,019	1,021	1,026	1,027	1,028	1,031	1,031	1,033
Electric Utilities	Million Btu/barrel	1,034	1,035	1,035	1,035	1,036	1,030	1,035	1,038
Non-Utility Users	Million Btu/barrel	1,016	1,018	1,024	1,025	1,026	1,031	1,030	1,032
Imports	Million Btu/barrel	1,030	1,037	1,022	1,014	1,018	1,024	1,005	1,002
Exports	Million Btu/barrel	1,013	1,013	1,013	1,011	1,011	1,010	1,010	1,011
Approximate Heat Rates for Electricity									
Hydroelectric Power	Btu/Kilowatt hour	10,361	10,353	10,388	10,453	10,423	10,445	10,211	10,211
Nuclear Power	Btu/Kilowatt hour	10,941	10,879	10,908	11,030	11,073	10,905	10,843	10,843
Geothermal Power	Btu/Kilowatt hour	21,611	21,545	21,639	21,639	21,629	21,290	21,303	21,303
Electricity Consumption	Btu/Kilowatt hour	3,412	3,412	3,412	3,412	3,412	3,412	3,412	3,412

CONVERSION FACTORS

Units of Measure for coal

Weight

1 short ton	contains	2,000 pounds
1 metric ton	contains	2,204 pounds
1 long ton	contains	2,204 pounds

Energy Equivalents for Crude Oil

One barrel of crude oil equals approximately:

- 42 gallons
- 5.7 thousand cubic feet of natural gas (dry)
- 0.26 short tons of bituminous coal and lignite produced
- 1,700 kilowatt-hours of electricity consumed

Average Annual Yields from a Barrel of Crude Oil

Product	Gallons	Percentage of Barrel
Finished motor gasoline	19.40	46.2
Finished aviation gasoline	0.08	0.2
Liquefied gases and ethane	0.92	2.2
Naphtha-type jet fuel	.71	1.7
Kerosene-type jet fuel	2.69	6.4
Kerosene	0.38	0.9
Distillate fuel oil	9.03	21.5
Residual fuel oil	3.70	8.8
Petrochemical feedstocks	1.51	3.6
Special naphthas	0.17	0.4
Lubricants	0.50	1.2
Wax	0.04	0.1
Petroleum coke	1.43	3.4
Asphalt and road oil	1.13	2.7
Still gas	1.85	4.4
Miscellaneous	0.29	0.7
Yield	43.83	104.4
Processing Gain	−1.83	−4.4
Total crude oil	**42.00**	**100.0**

Approximate Heat Content of Petroleum Products

	Million Btu/Barrel
Apshalt	6.636
Aviation Gasoline	5.048
Butane	4.326
Butane-propane mixture	4.130
Distillate fuel oil	5.825
Ethane	3.082
Ethane-propane mixture	3.308
Isobutane	3.974
Jet fuel-kerosene type	5.670
Jet fuel-naphtha type	5.355
Kerosene	5.670
Lubricants	6.065
Motor Gasoline	5.253
Natural Gasoline	4.620
Petrochemical feedstocks	
Naphtha 400 F or less	5.248
Other oils over 400 F	5.825
Still gas	6.000
Petroleum coke	6.024
Plant condensate	5.418
Propane	3.836
Residual fuel oil	6.287
Road oil	6.636
Special naphtha	5.248
Still gas	6.000
Unfinished oils	5.825
Unfractionated stream	5.418
Wax	5.537
Miscellaneous	5.796

ABBREVIATIONS

M - Thousand or 10^3
MM - Million or 10^6
B - Billion or 10^9
T - Trillion or 10^{12}

Btu - British Thermal Unit
Bbl - Barrel
Cf - Cubic Feet
Tons - Short Tons

Gal - Gallon
Kwh - Kilowatt-hour
Gwh - Gigawatt-hour or million Kwh
Mwh - Megawatt-hour

G.S.P. - Gross State Product
G.N.P. - Gross National Product
OPEC - Organization of Petroleum Exporting Countries